

## CHAPTER 18

# LPU-23C/P LIFE PRESERVER ASSEMBLY

### Section 18-1. Description

#### 18-1. GENERAL.

##### WARNING

The LPU-23C/P life preserver contains an automatic inflation device and is configured for use only in aircraft with ejection seat systems.

18-2. The LPU-23C/P life preserver is authorized for use only by aircrew personnel operating high performance aircraft equipped with ejection seat systems. It is designed as a constant wear item for use with the SV-2B survival vest or torso harness modified by ACC 380. Survival item pouches are attached to the life preserver casing and signal flares are not initially supplied and must be individually requisitioned. See [figures 18-1, 18-2](#) and [table 18-1](#).

18-3. The LPU-23B/P flotation assembly may be used in conjunction with the LPU-23C/P casing assembly. This configuration has been designated LPU-23B(V)1/P. See [Chapter 27](#).

##### NOTE

The use of the LPU-23C/P flotation assembly with the LPU-23B/P is not authorized.

#### 18-4. CONFIGURATION.

18-5. LPU-21/P and LPU-21A/P life preservers were configured with the FLU-8A/P automatic inflation device and redesignated LPU-23A/P. Subsequent requisitions of the LPU-23/P series life preserver from

supply were designated LPU-23B/P. Continued improvement in the structure of the LPU-21/P series life preserver resulted in the LPU-21D/P which features a heat sealed flotation bladder assembly. This new configuration, coupled with the FLU-8A/P automatic inflation device, was redesignated LPU-23C/P life preserver. The FLU-8A/P will, through attrition, be replaced by the FLU-8B/P automatic inflation device.

##### NOTE

The LPU-23C/P life preserver assembly weighs four pounds (without survival items) and provides a minimum of 65 pounds buoyancy.

##### CAUTION

Only Polyurethane adhesives and Polyurethane-coated cloth and patches shall be used on Polyurethane-coated LPU-23C/P life preserver assemblies.

**18-6. FLOTATION ASSEMBLY.** The flotation assembly is constructed of polyurethane-coated nylon cloth. The assembly consists of two independent heat sealed flotation chambers. One chamber consists of the left waist lobe interconnected by a channel to the right collar lobe. The other chamber consists of the right waist lobe interconnected by a channel to the left collar lobe. Attached to a valve stem in each waist lobe is an automatic/manual CO<sub>2</sub> inflation assembly (FLU-8B/P). Also attached to each waist lobe is an oral inflation valve. The two chambers are sewn together at the center seam flash of the collar lobes. See [figures 18-1](#) and [18-2](#).

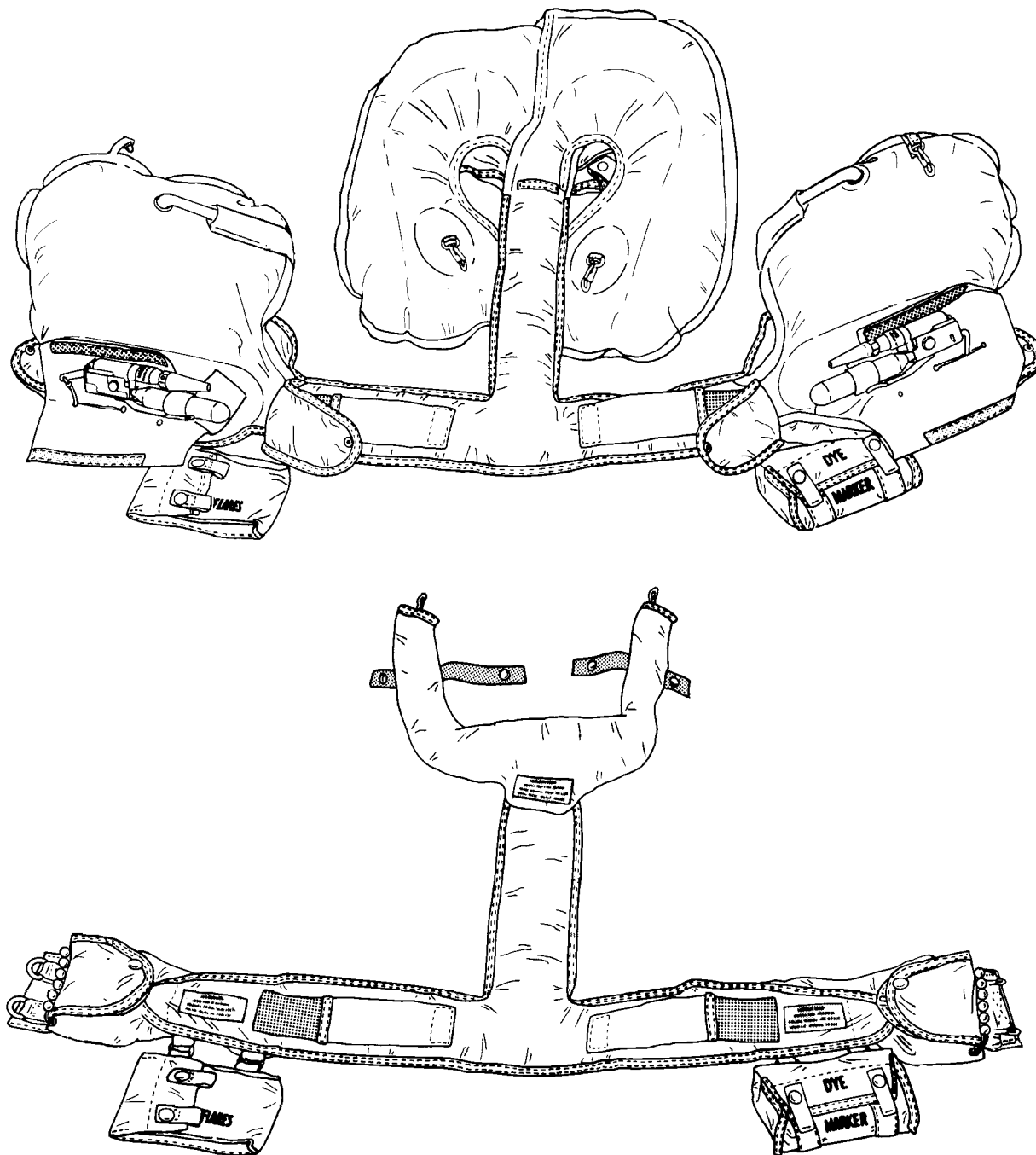
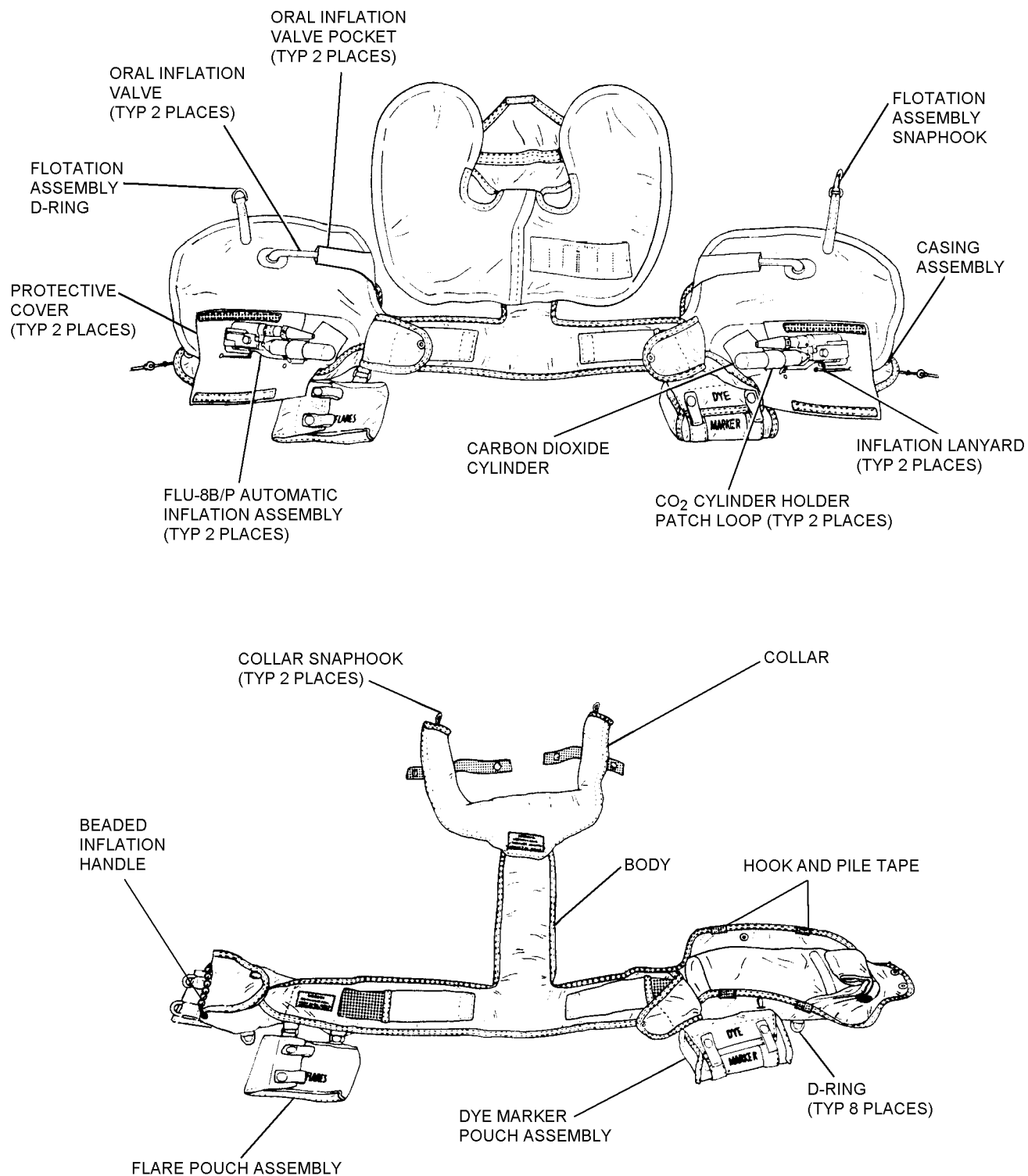


Figure 18-1. LPU-23C/P Life Preserver Assembly

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Figure 18-2. LPU-23C/P Life Preserver Assembly, Parts Nomenclature

**NOTE**

The designation FLU-8A/P has been left in this chapter, although all FLU-8A/P units should have been replaced with FLU-8B/P units. Any FLU-8A/P Automatic Inflator found in service during scheduled maintenance shall be replaced with a FLU-8B/P Automatic Inflator.

**18-7. AUTOMATIC INFLATION DEVICE**

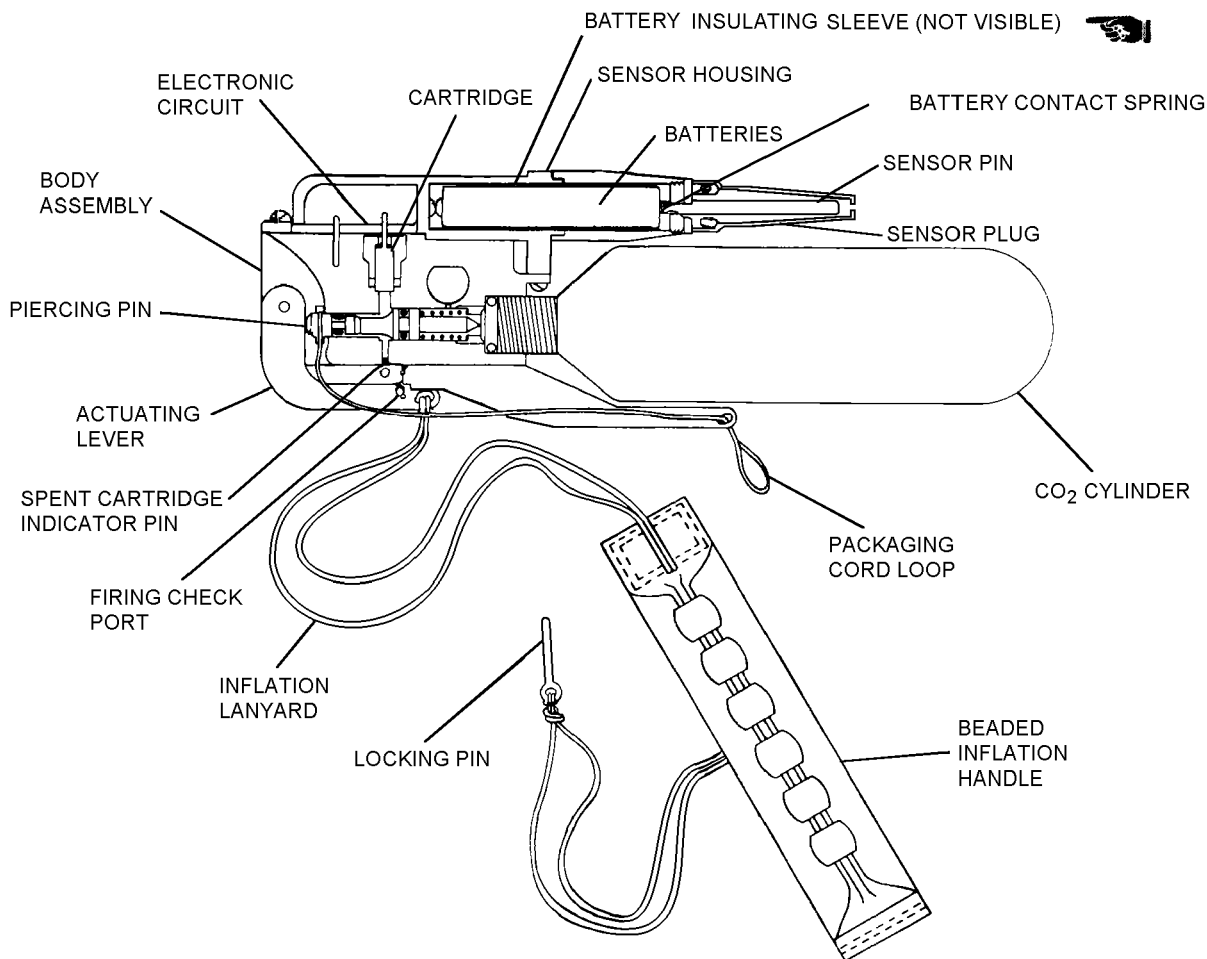
**FLU-8B/P.** The FLU-8B/P is a sealed, cartridge actuated automatic inflation device with manual inflation capability (figure 18-3). The device consists of a sensor housing and a body assembly into which a charged carbon dioxide (CO<sub>2</sub>) cylinder, with an O-ring, is threaded. The sensor housing contains an electronic circuit which, when immersed in fresh or salt water, initiates automatic inflation of the LPU-23C/P life preserver. An inflation lanyard attached to the actuating lever and connected to the beaded inflation handle and nylon locking pin of the casing assembly, provides the manual inflation capability. (For more details on the FLU-8B/P, refer to

NAVAIR 11-100-1.1.) The automatic inflation device is installed on the valve stem of each waist lobe of the flotation assembly. A cap nut secures the device and upper and lower pressure-seal gaskets on the valve stem and serves as a cap for the valve stem.

**18-8. WAIST LOBE.** Each waist lobe of the flotation assembly has an attached attachment patch in which six uni-directional snap fastener sockets are installed. These snap fastener sockets, when mated with six uni-directional snap fastener studs on the casing assembly, secure the waist lobes of the flotation assembly to the casing assembly. The right waist lobe is equipped with a snaphook which connects to a D-ring on the left waist lobe to secure the lobes together after inflation.

**NOTE**

The uni-directional snap fastener socket is installed with the dot on its button oriented to the side of the fastener on which lift is applied to disengage the socket from the snap fastener stud.



**Figure 18-3. Automatic Inflation Device FLU-8B/P**

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**18-9. COLLAR LOBE.** Each collar lobe is equipped with a snaphook to attach the lobe to the D-ring of the survival vest. The inspection record patch of the life preserver is attached to the right collar lobe.

**18-10. CASING ASSEMBLY.** The casing assembly, which is fabricated from fire retardant aramid cloth, provides the flotation assembly with a protective cover. The assembly consists of the adjustable casing, belt keeper loops, snap fastener studs on the inside waist portion (which mate with snap fastener sockets on the waist lobes), and the front connector assembly.

18-11. Webbing belt keeper loops provide a means to attach the life preserver to the SV-2 survival vest or the integrated torso harness suit about the wearer's waist. Six D-rings on webbing belt keeper loops provide attach points for survival item pouches, life raft retaining line, and other accessories.

**18-12. HOOK AND PILE TAPES.** Hook and pile tapes, attached to the outside waist portion of the casing, are used for slack adjustment. In addition, hook and pile tapes attached about the periphery of the collar casing and the lower edge of the back portion of the casing are used to enclose the casing assembly about the flotation assembly.

### 18-13. APPLICATION.

18-14. The LPU-23C/P life preserver assembly is authorized for wear only by aircrew personnel wearing compatible flight clothing in high performance aircraft equipped with ejection seat systems.

### 18-15. FUNCTION.

18-16. The LPU-23C/P life preserver assembly is inflated either automatically (by immersion in fresh or salt water) or manually (by pulling both inflation assembly beaded handles).

18-17. The primary method of initiating inflation of the LPU-23C/P life preserver is the manual mode; pulling both beaded inflation handles. The beaded inflation handles provide the life preserver with a multidirectional capability for inflation initiation. The most effective and commonly used procedure is to pull both beaded inflation handles in a natural, slightly down and straight out direction from the body. Each beaded inflation handle is connected by lanyard to the actuating lever of the inflation assembly and the nylon locking pin of the casing assembly. When the beaded inflation handle is pulled, the locking pin is withdrawn from the outer packaging cord loop freeing the inboard and outboard casing flaps. Si-

multaneously, tension on the inflation lanyard moves the actuating lever to its actuated position. The rotary cam action of the hub of the actuating lever drives the piercing pin forward to puncture the diaphragm of the CO<sub>2</sub> cylinder. As the piercing pin is driven forward, the inner loop of the packaging cord is released from the inflator body. Carbon dioxide under pressure is released from the cylinder to inflate the life preserver. Hook and pile tapes which secure the casing assembly about the collar lobes separate as inflation occurs. After each activation in the manual mode, the CO<sub>2</sub> cylinder and O-ring must be replaced with a charged cylinder and new O-ring.

18-18. The FLU-8B/P Automatic Inflation Device serves as a backup inflation system for the LPU-23C/P life preserver. Automatic inflation occurs when immersion in fresh or salt water activates the electronic circuit in the sensor housing of the device (figure 18-3). The activated electronic circuit detonates an explosive primer (cartridge). Energy from the burning explosive forces the spent-cartridge indicator into the firing check port and simultaneously propels the piercing pin forward. As the piercing pin punctures the diaphragm of the CO<sub>2</sub> cylinder carbon dioxide under pressure is released to inflate the life preserver. During the forward movement of the piercing pin, the inner loop of the packaging cord is released from the body of the inflator. Hook and pile tape which secures the casing assembly about the collar lobes separate as inflation occurs.

18-19. Automatic inflation is a one-time function for the automatic inflation device (inflator). After each activation in the automatic mode, the inflator must be replaced with a new one.

#### NOTE

The FLU-8B/P automatic inflation device may be operated in the manual mode an unlimited number of times without affecting its one-time automatic feature.

18-20. In an emergency situation, the oral inflation valves may be used to top off the inflated preserver, maintain inflation of a leaky preserver, or inflate a chamber if an inflation assembly malfunctions. The oral inflation valves are also used to inflate a preserver with air during an inspection test or to evacuate a preserver in preparation for packing.

#### NOTE

The casing must be manually opened and the flotation assembly unfolded before the life preserver can be inflated using the oral inflation valve.

Table 18-1. LPU-23/P Series Survival Items

Description	Quantity Required	Reference Number	NIIN	SM&R Code
Dye Marker ( <a href="#">Note 1</a> )	2	MIL-S-17980	00-210-9986	PAOZZ
Signal, Smoke and Illumination, Marine MK-124 MOD 0 ( <a href="#">Note 1</a> )	2	—	01-030-8330	PA--Z
Notes: 1. Optional equipment at the discretion of the Squadron Commander.				

Section 18-2. Modifications

18-21. GENERAL.

18-22. There are no authorized modifications to the LPU-23C/P life preservers at this time. Common repairs and fabrication instructions to maintain serviceability are listed in [table 18-2](#).

**Table 18-2. LPU-23C/P Common Repairs and Fabrications**

Description of Repair or Fabrication	Paragraph Number
Determination of Repairability	<a href="#">18-60</a>
Casing Repair Procedures	<a href="#">18-61</a>
Casing Grommet Replacement Procedures	<a href="#">18-62</a>
Cementing Life Preservers	<a href="#">18-63</a>
Patching Life Preservers	<a href="#">18-64</a>
Replacement of Oral Inflation Valve	<a href="#">18-66</a>
Recementing of Bladder Fin Seams	<a href="#">18-67</a>
Fabrication of Slip-On Pockets For Life Preserver Hardware	<a href="#">18-70</a>
Replacement of Flare and Dye Marker Pouch Snaphooks	<a href="#">18-71</a>
Replacement of Collar Lobe Snaphooks	<a href="#">18-72</a>
Flare Pouch Repair	<a href="#">18-73</a>
Disassembly of the Life Preserver	<a href="#">18-74</a>
Reassembly of Life Preserver	<a href="#">18-75</a>
Replacement of Beaded Inflation Handle Assembly	<a href="#">18-76</a>
Replacement of FLU-8B/P Automatic Inflator Assembly	<a href="#">18-77</a>
Replacement of Packaging Cord Loop, FLU-8B/P	<a href="#">18-78</a>
Replacement of Sensor Plug Cap Assembly, FLU-8B/P	<a href="#">18-79</a>
Replacement of Top and Bottom Gaskets	<a href="#">18-80</a>
Replacement of Check Valve Assembly	<a href="#">18-81</a>
Fabrication of Protective Cover Assembly	<a href="#">18-82</a>
Fabrication of Collar Lobe Webbing Loops	<a href="#">18-83</a>
Fabrication and Installation of Waist Lobe Attachment Patch	<a href="#">18-84</a>
Attachment Patch	<a href="#">18-85</a>
Installation of Casing Attachment Patch Snap Fastener Studs	<a href="#">18-86</a>
Fabrication and Installation of Locking Pin Cover (Life Preservers without No. 3 Spur)	<a href="#">18-87</a>

## Section 18-3. Maintenance

### 18-23. GENERAL.

18-24. This section contains information on inspection, disassembly, repair/replacement, testing, and re-assembly of the LRU-23C/P life preserver.

### 18-25. INSPECTION.

18-26. All life preservers shall be subjected to Preflight, Special and Calendar/Phase Inspections.

18-27. The Preflight Inspection shall be performed on life preservers prior to each flight by the aircrew member to whom the life preserver is assigned. The Preflight Inspection shall be performed on life preservers installed in aircraft prior to each flight by assigned aircrewmembers.

18-28. The Special Inspection shall be performed on all aircraft installed life preservers at intervals not to exceed 30 days. The inspection shall be performed at the organizational level of maintenance by personnel assigned to the Aviator's Equipment Branch.

18-29. Upon completion of the inspection, make necessary entries on the appropriate form in accordance with 4790.2 Series. The 30-Day Special Inspection may be recorded on a separate history card from the history card recording Calendar/Phase Inspections, functional checks, and modifications.

18-30. The Calendar/Phase Inspection shall be performed on all life preservers prior to placing in service. The Inspection cycle thereafter shall be as follows: personal issue life preservers shall be inspected once every 90 days. Aircraft-installed life preserver inspection shall coincide with the inspection cycle of the aircraft in which installed. See applicable Planned Maintenance System (PMS) publications for specific intervals. In no case shall the interval exceed 231 days. Unless operational requirements demand otherwise, the life preserver Calendar/Phase Inspection shall be performed by the intermediate level of maintenance or above. The functional test shall be performed prior to placing in service, every fourth inspection cycle thereafter, and whenever an inflation assembly is replaced. The leakage test shall be performed during every inspection cycle. The battery visual inspection for the LPU-23C/P will be performed prior to placing life preservers in service. If

inspection indicates damage, complete appropriate forms in accordance with OPNAVINST 4790.2 Series and forward entire assembly to supply. Refer to [paragraph 18-60](#) for determination of repairability.

**18-31. QUALITY ASSURANCE.** Properly detailed procedures present a logical sequence for the inspection process. The more critical procedures are underlined to designate steps which require a Quality Assurance inspection to assure performance of specific requirements. After the underlined step is performed by the Aircrew Survival Equipmentman, the procedure shall be verified before the next step is performed. This verification shall be performed by a Collateral Duty Inspector or Quality Assurance Representative (CDI, CDQAR, or QAR). Work Center supervisors are primarily responsible for quality assurance within their centers. OPNAVINST 4790.2 Series permits supervisors to nominate their more experienced personnel to serve as quality assurance inspectors. Nominated personnel shall be screened and examined by the Quality Assurance Officer prior to their designation as Quality Assurance Inspectors or Quality Assurance Representatives by the Commanding Officer. Under no circumstances shall an Aircrew Survival Equipmentman perform his own quality assurance inspection.

**18-32. PREFLIGHT/SPECIAL INSPECTION.** To perform a Preflight/Special Inspection, proceed as follows:

#### WARNING

Ensure that the beaded inflation handles are readily accessible. Beaded inflation handles shall be secured with four snap fasteners to the life preserver end flap.

#### CAUTION

Do not open any sealed or safety-wired/safety tied portions of preserver for Preflight/Special Inspection.

1. Inspect exposed metal parts for corrosion and damage.



2. Inspect for presence, security of attachment and, if applicable, operation of survival items.

3. Inspect casing fabric for cuts, tears, abrasions, security of stitching, and other damage.

4. Check warning label for secure attachment to life preserver fabric.

5. Ensure beaded inflation handles are secured to snap fasteners. Inspect safety ties on beaded inflation handles. The beaded inflation handle safety ties may be replaced without removing the life preserver from service.

6. Inspect safety ties on locking pins.

7. Inspect uni-directional snap fasteners securing flotation assembly to casing assembly for presence, security of attachment, corrosion, and ease of operation.

8. Inspect hook and pile tape closure at collar for separation; fasten as necessary.

9. Adjust and don preserver to ensure proper fit.

10. If any discrepancy is noted, the preserver shall be removed from service and repaired in accordance with procedures in this volume.

**18-33. ACCEPTANCE/CALENDAR/PHASE INSPECTION.** The Acceptance/Calendar/Phase Inspection consists of the following tasks:

1. Beaded Inflation Handle Inspection
2. Case, Container/Pouch Inspection
3. Functional Test (every fourth inspection cycle)
4. Visual Inspection
5. Life Preserver Configuration
6. General Inspection
7. Battery Visual Inspection (every fourth inspection cycle)
8. Battery Voltage Testing (once every 90 days)
9. Markings Inspection
10. Survival Items Inspection
11. Inflation Assembly Inspection
12. Beaded Inflation Handle Pull Test
13. Leakage Test
14. Records Updating

15. Repacking

**18-34. BEADED INFLATION HANDLE INSPECTION.**

Inspect beaded inflation handle for the following:

1. Attachment of inflation lanyard to beaded handle.

2. Attachment of locking pin lanyard to beaded handle. Overhand knot on locking pin lanyard shall be within 3/4 inch from eye of pin.

3. Corrosion on snap fasteners and ease of operation.

4. Cuts, tears, deterioration, abrasion, stains, and general cleanliness of fabric.

5. Presence of safety tie on beaded inflation handle.

**18-35. CASE, CONTAINER/POUCH INSPECTION.**

To inspect cases, containers, and/or pouches, proceed as follows:

1. Inspect fabric for cuts, tears, deterioration, abrasion, stains, and general cleanliness.

2. Inspect seams for proper adhesion or stitching.

3. Inspect straps and loops for security and wear.

4. Inspect any other parts for wear, damage, and security.

**NOTE**

Life preservers missing the D-rings used to attach dye marker and flare pouches shall be considered serviceable provided the aircrewmember to whom it is issued does not desire to utilize the pouches.

5. All hardware for security of attachment, corrosion, damage, wear and, if applicable, ease of operation.

6. Inspect uni-directional snap fastener assemblies for presence, security of attachment, proper orientation, ease of operation, corrosion, and wear.

**NOTE**

All uni-directional snap fasteners shall be installed with the dot on the button of the snap fastener socket positioned on the side of the snap fastener to which lift must be applied to disengage the socket from the snap fastener stud.

All snap fasteners on the attachment patch of each flotation lobe shall be installed with the dot on each socket button positioned nearest to, and pointing toward, the center point of the attachment patch.

7. If any discrepancies are found, the case, container, or pouch shall be repaired or removed from service as deemed appropriate by the inspection activity.

**18-36. FUNCTIONAL TEST.** To perform a functional test, proceed as follows:



Ensure area surrounding preserver is free of foreign objects.

1. Completely open preserver casing prior to conducting functional test. Both release pins shall be removed from their respective loops, the collar hook and pile tape fasteners shall be separated, and the waist and collar lobes shall be completely unfolded and laid out flat.



The functional test for the LPU-23C/P series life preservers will be performed manually. Automatic actuation of the FLU-8B/P automatic inflator is a one-time function. A new FLU-8B/P inflator shall be installed on the life preserver to replace a previously spent one. The FLU-8B/P inflators can be operated manually an unlimited number of times, however, after each manual operation a new O-ring and CO<sub>2</sub> cylinder must be installed. Refer to [paragraph 18-55](#).

- 2. Actuate inflation assemblies.
- 3. The preserver shall fully inflate to design shape, without evidence of restriction, in less than 30 seconds.
- 4. If preserver does not properly inflate, determine cause. Ensure stem and valve are clean and free of foreign matter.
- 5. If correction is made, the preserver shall be functionally tested again.
- 6. Deflate preserver in accordance with [paragraph 18-37](#) to remove all CO<sub>2</sub>.

**18-37. DEFLATION.** To deflate a life preserver, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Pump, Rotary Vacuum (or equivalent)	NIIN 00-052-5015 (90567)
As Required	Hose, 3/8- or 1/2-inch, inside Diameter, Rubber	—

- 1. Attach one end of rubber hose to vacuum pump.
- 2. Deflate through oral inflation valves. Unlock oral inflation valve, hold in open position, and hold vacuum pump hose against end of oral inflation valve. When compartment is collapsed, release oral inflation valve. Screw lock closed.

**18-38. VISUAL INSPECTION.** Prior to visually inspecting a life preserver assembly, the life preserver shall be inflated with air to 1.0 psig.



Remove all carbon dioxide cylinders prior to inflating life preserver with air.

NOTE

If suitable air source is not available, water-pumped nitrogen (FED SPEC BB-N-411) may be substituted.

**18-39. LIFE PRESERVER CONFIGURATION.** The life preserver shall be updated by comparing it to [figures 18-1](#) and [18-2](#), and [Section 18-4](#).

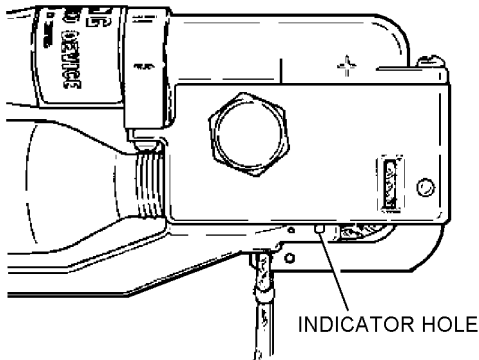
**18-40. GENERAL INSPECTION.** Examine life preservers for the following:

- 1. Preserver fabric for cuts, tears, punctures, deterioration and abrasion. Refer to [paragraph 18-61](#) for repair instructions.
- 2. Seam tapes for proper adhesion. Refer to [paragraph 18-67](#) for repair instructions.
- 3. Valve inlet stems for security.

4. Check that silver indicator is not visible in firing check port. If the silver indicator is visible, the inflator is spent and the automatic feature of the inflator is negated. A new inflator shall be installed on the life preserver to replace the previously spent inflator. Refer to [paragraph 18-77](#).

**NOTE**

For data on total life of the FLU-8B/P automatic inflation assembly, refer to NAV-AIR 11-100-1.1. If total life expiration date occurs before date of next scheduled calendar inspection, replace inflator assembly. The manganese dioxide batteries used in the assembly have a total life of 3 years from the date of manufacture.



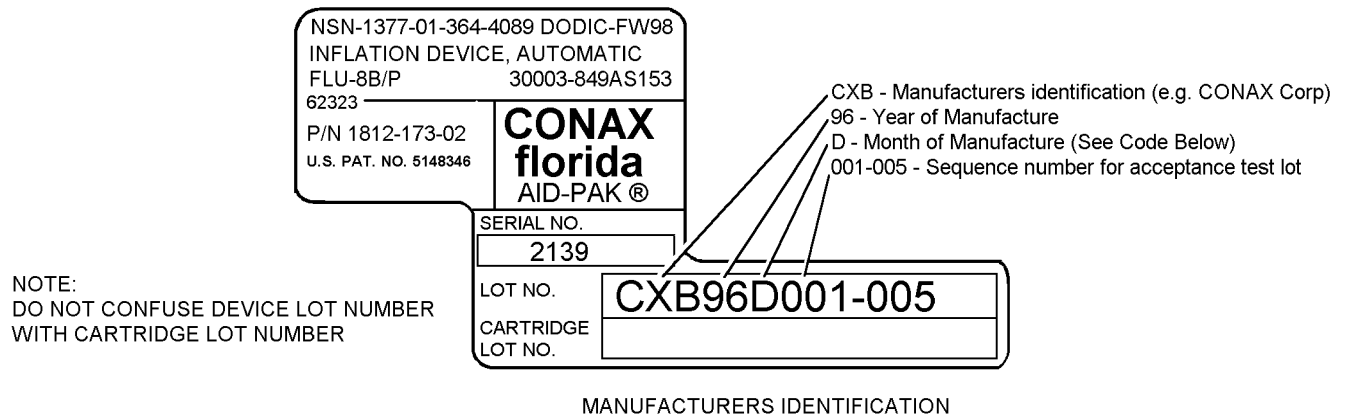
**Step 4 - Para 18-40**

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5. Check records (OPNAVINST 4790.2 Series) for date of installation of each FLU-8B/P automatic inflator. For date of manufacture, refer to the manufacturer's identification plate of each FLU-8B/P inflator. See [figure 18-4](#) for lot numbering system.

6. Oral inflation valve(s) for cracks, security, ease of operation, and corrosion.

7. Patches for proper adhesion and wear. Refer to [paragraph 18-64](#) for repair instructions.



**Code for Month of Manufacture**

A - Jan	D - Apri	G - Jul	K - Oct
B - Feb	E - May	H - Aug	L - Nov
C - Mar	F - Jun	J - Sept	M - Dec

**Figure 18-4. Lot Numbering System for FLU-8B/P Automatic Inflators**

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- 8. Any other parts for wear or other damage.
- 9. All hardware for security of attachment, corrosion, damage, wear and, if applicable, ease of operation.
- 10. Preservers for stains, dirt, and general cleanliness. Refer to [paragraph 18-51](#) for cleaning instructions.
- 11. Cross threading and/or loose manifold nuts.

**18-41. BATTERY VISUAL INSPECTION.** To inspect the batteries installed in the FLU-8B/P inflator, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Multimeter (Digital)	8600A or equivalent (CAGE 89536) NIIN 01-010-0088
1	Wrench, 3/4-Inch	—

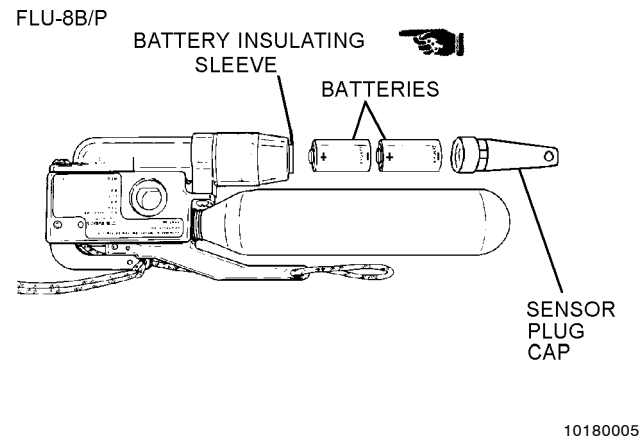
**WARNING**

- No object should be inserted into sensor plug side ports for any reason.
- 1. Remove sensor plug cap using a standard 3/4-inch wrench. See [figure 18-5](#).
  - 2. Remove batteries and check for the following: leakage, corrosion, dents, depressions and cracks. If found the batteries shall be rejected.
  - 2A. Inspect end of battery insulating sleeve that protrudes from battery compartment for cracks/tears. Replace battery insulating sleeves that have cracks and tears that continue into the battery compartment. Small defects that do not travel into the wall of the battery compartment are acceptable.
  - 3. Check sensor plug cap for cracks.

**NOTE**

The total service life for the manganese dioxide battery (FW14) is three years from date of manufacture. For date coding information on the FW14 battery, refer to NAVAIR 11-100-1.1. Replace both batteries if life of either battery expires prior to the next calendar inspection.

- 4. Check date of manufacture stamped on the battery. Also check date of installation recorded in records (refer to OPNAVINST 4790.2 Series).



**Figure 18-5. Battery Removal**

- 4A. Using multimeter set-up to measure dc voltage, check each battery for shorted casing. Place one lead on the positive terminal and the other on the battery case. If a voltage reading of 0.1 volts dc or higher is obtained, reject the battery for use and discard battery in an appropriate manner.
  - 5. Reinstall or replace batteries if needed. Torque FLU-8B/P sensor plug cap to 15 lb-in using 3/4-inch socket and torque wrench. Ensure that date of installation and date of manufacture are recorded on appropriate form in accordance with OPNAVINST 4790.2 Series. See [figure 18-5](#) for proper battery arrangement and refer to [paragraph 18-56](#) for battery replacement.
- 18-42. BATTERY VOLTAGE TESTING.** To test batteries, proceed as follows:

**CAUTION**

Do not use analog (needle) voltage multimeter. Use digital reading voltage multimeter.

Support Equipment Required

Quantity	Description	Reference Number
1	Multimeter (Digital)	8600A or equivalent (CAGE 89536) NIIN 01-010-0088

**WARNING**

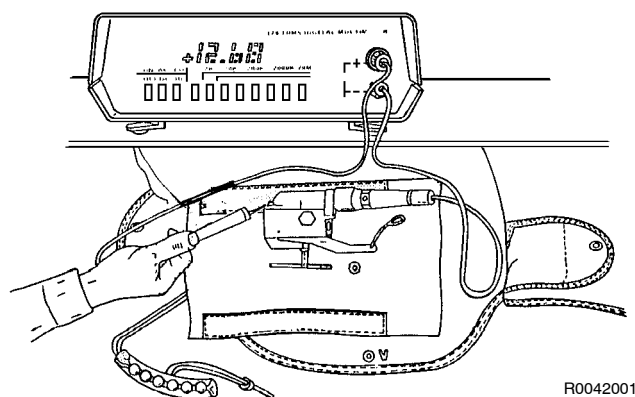
Ensure that the multimeter is set in the voltage measuring mode and NOT the resistance measuring mode as a resistance measurement will trigger the squib and fire the inflator. The inflator will also fire with any conductive material making contact from the sensor pin to any conductive surface of the inflator device.

Do not touch the inflator with your bare hands or any conductive material while performing this test. Faulty readings may be obtained, or the squib may be fired if the body becomes an electrical pathway between the sensor pin and any conductive part of the inflator assembly.

**NOTE**

Provide the positive (+) test lead with a standard test probe (1/16-inch size) on a standard handle (3-4-inch nominal length). Provide the negative (-) test lead with a banana type-test plug (1/8-inch size) on a short handle (one-inch nominal length). Adjust the tension on the ribs of the banana plug so that when inserted into a sensor plug end port (7/16-inch nominal depth) the weight of the test lead will not withdraw the plug. (Use an undamaged uninstalled sensor plug for verification, not an inflator with batteries installed).

1. Insert the negative (-) test probe into the end port of the sensor plug. Remove hand. Using the pointed positive (+) probe, touch and maintain contact with one of the screw heads near the lever-end of the inflator.



**Step 1 - Para 18-42**

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2. Wait 15 seconds for the FLU-8B/P circuits to stabilize after connecting the test leads before taking the voltage reading.

**WARNING**

The voltage reading should begin at a high value and then gradually shift downward (0.15 volts typical) before final stabilization. If no downward shift in meter reading occurs, or if the shift continues steadily downward more than 1.0 volt during battery test, the FLU-8B/P inflator shall be rejected.

**CAUTION**

Never replace one battery. Always replace the pair.

3. Interpret battery test readings and respond as indicated below:

a. A reading of +12 volts or more indicates that the batteries are at full power and correctly installed.

b. A reading of -12 volts or more indicates that both batteries are installed backwards. Batteries must be reversed.

c. A reading of zero volts indicates one battery is inserted backwards, battery contact is faulty or batteries are not installed. Inspect and correct.

d. If a correct battery voltage reading cannot be obtained with batteries of verified full charge properly installed, the inflator is defective. Reject and report for engineering investigation according to OP-NAVINST 4790.2 Series.

NOTE

The same multimeter and test leads may be used to test batteries singly or in pairs external to the inflator. Voltage readings will be slightly higher and will not drift downward when testing outside the inflator.

4. If batteries need to be rearranged or replaced, refer to paragraph 18-56.

5. After replacing or rearranging batteries, repeat steps 1 and 2.

**18-43. MARKINGS INSPECTION.** To inspect and restore marking, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Ink, Marking, Laundry, Black	SPE-92 NIIN 00-161-4229
	-or-	
As Required	Ink, Drawing, Waterproof, Yellow	A-A-59291 NIIN 00-634-6583

1. Compare markings on preserver to those listed in table 18-3.

2. Restore any faded markings.

3. Deleted.

4. Correct any markings which do not agree with the applicable table. Paint out old marking and enter new marking as close to proper position as possible.

**18-44. SURVIVAL ITEMS INSPECTION.** To inspect survival items, proceed as follows:

1. Inventory all items by checking items against table 18-1. Replace any missing or unsatisfactory item.

NOTE

NAVAIR 13-1-6.5, Rescue and Survival Equipment contains detailed information on the inspection of survival items.

2. Inspect all items for damage, spent contents and expired service life. Replace as necessary.

3. Operate all items which are not intended for one-time use. Replace as necessary.

**18-45. INFLATION ASSEMBLY INSPECTION.** To inspect life preserver inflation assemblies, proceed as follows:

1. Remove CO<sub>2</sub> cylinder locking screws, if present, and remove CO<sub>2</sub> cylinders from valve assembly.

2. Examine inflation device, actuating lever and lanyard, and locking pins for fraying, corrosion, stripped threads, and other damage.

3. If required, remove any sharp edges from valve with a fine round file.

4. Operate actuating lever several times. Ensure that lever moves freely and ensure that piercing pin moves properly inside valve body. Inspect point of piercing pin for serviceability. If point is flat, rounded, dull, or otherwise worn or damaged, replace inflation assembly.

5. Ensure that packaging cord loop is not pinched between piercing pin and actuating lever. If there is free play in the actuating lever when it is in its cocked position, the packaging cord loop is pinched. If necessary, reinstall in accordance with paragraph 18-78.

NOTE

Each time inflation assembly gaskets or inflation assembly is removed and replaced for any reason, a functional test shall be conducted. Refer to paragraph 18-36. Use new gaskets when replacing device.

6. If any discrepancy is noted in device that is not repairable in accordance with paragraph 18-77, remove assembly and install a new inflation device.

7. If CO<sub>2</sub> cylinder locking screws are installed, remove them.

Table 18-3. LPU-23C/P Life Preserver Markings

Marking (Note 1)	Location	Letter Height
CASING, LIFE PRESERVER, LPU-23B(V)1/P 1957AS104-2 CONTRACT NO. [applicable number] MANUFACTURER [applicable number] DATE OF MANUFACTURE [month and year] SERIAL NO. [applicable number]	Center of casing waist section (inside)	5/16 inch 3/16 inch
DYE MARKER	Pouch (right side)	1/2 inch
FLARES	Pouch (left side)	1/2 inch
CASING, LIFE PRESERVER, LPU-23C/P 1957AS103-1 CONTRACT NO. [applicable number] MANUFACTURER [name of manufacturer] DATE OF MANUFACTURE [month and year] SERIAL NO. [applicable number]	Center of casing waist section (inside)	5/16 inch 3/16 inch 1/4 (Any readable size acceptable)
LIFE PRESERVER INFLATABLE, AUTOMATIC LPU-23A/P PART NO. 68A73H1-102 <div style="border: 2px solid black; padding: 5px; text-align: center; margin: 10px 0;"><b>WARNING</b></div> AUTOMATIC INFLATION DEVICE INSTALLED FOR USE IN EJECTION SEAT AIRCRAFT <u>ONLY</u>	Center of casing waist section (inside)	3/16 inch   1/4 inch   3/16 inch
LIFE PRESERVER INFLATABLE, AUTOMATIC LPU-23B/P PART NO. 68A73H1-104 AND LPU-23C/P PART NO. 1957AS103-1 <div style="border: 2px solid black; padding: 5px; text-align: center; margin: 10px 0;"><b>WARNING</b></div> AUTOMATIC INFLATION DEVICE INSTALLED FOR USE IN EJECTION SEAT AIRCRAFT <u>ONLY</u>	Center of casing waist section (inside)	3/16 inch   1/4 inch   3/16 inch

Table 18-3. LPU-23C/P Life Preserver Markings (Cont)

Marking (Note 1)	Location	Letter Height
<div><div>WARNING</div><div>AUTOMATIC INFLATION DEVICE INSTALLED FOR USE IN EJECTION SEAT AIRCRAFT <u>ONLY</u></div></div>	Right and Left side of waist casing (outside) collar lobe casing (outside)	1/4 inch  3/16 inch
Notes: 1. Replacement markings shall be stamped or stenciled using waterproof black ink.		

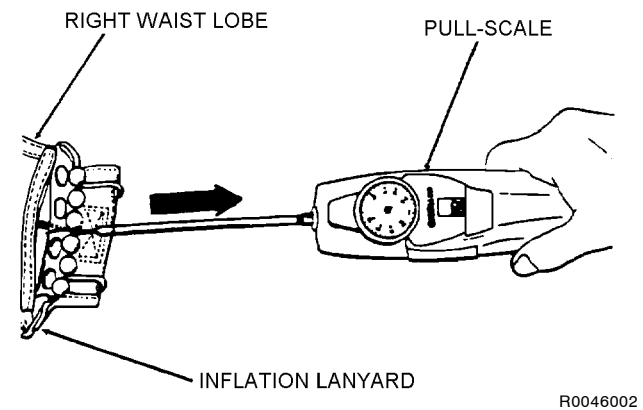
**18-46. BEADED INFLATION HANDLE PULL TEST.** To perform the beaded inflation handle pull test, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Gage, Dial, Push/Pull, 0 to 50 lb	DPPH50 (CAGE 11710) or equivalent NIIN 00-473-0108

1. Ensure that CO<sub>2</sub> cylinders have been removed. Actuate the inflator assembly. All snap fasteners on beaded inflation handle must be fully engaged.

2. Attach gage to webbing between third and fourth bead on inflation handle.



Step 2 - Para 18-46

3. Hold inflator steady. Slowly exert a 25-pound straight pull on webbing. All snap fasteners should release at or before 25 pounds.

4. If all snap fasteners do not release at or before the 25 pound limit, inspect male and female snap fasteners for damage. Replace the entire beaded inflation handle if required and repeat [steps 1 through 4](#).

5. If all the snap fasteners release properly, leave the pull scale attached, add an additional 25 pound force to check the security of the beaded inflation handle attachment to the inflation lanyard. Examine the lanyard for frays, ruptures, thin spots, split casing, and security of knots. If unsatisfactory, replace entire beaded inflation handle. Refer to [paragraph 18-76](#).

6. Ensure that packaging cord loop is not pinched between piercing pin and actuating lever. If there is free play in the actuating lever when it is in its cocked position, the packaging cord loop is pinched. If necessary, reinstall in accordance with [paragraph 18-78](#).

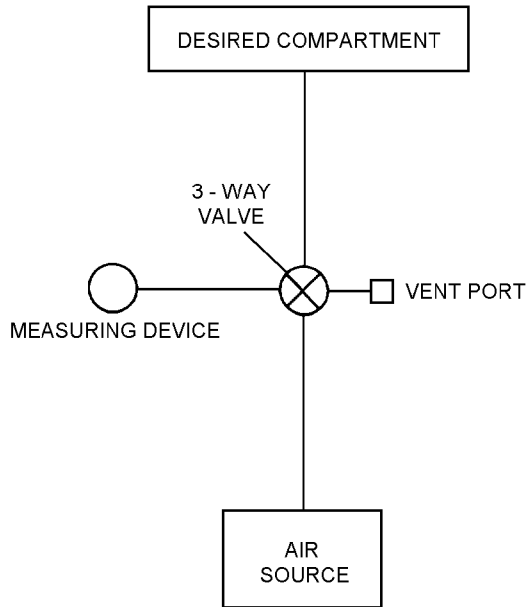
**18-47. LEAKAGE TEST.** All life preservers shall be subjected to a leakage test each Calendar/Phase Inspection. To perform a leakage test proceed in accordance with [paragraph 18-49](#).

**18-48. Test Fixture.** A suggested test fixture, consisting of a three-way valve, pressure gage, and adapters for compartments being tested, is shown in [Chapter 3](#). Fixtures must be fabricated to meet the requirements of the schematic shown in [figure 18-6](#).



**NOTE**

If a suitable air source is not available, water-pumped nitrogen (BB-N-411) may be substituted.



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**Figure 18-6. Test Fixture Schematic**

**18-49. Test Procedure.** To test life preservers, proceed as follows:

**Support Equipment Required**

Quantity	Description	Reference Number
1	Test Fixture (or equivalent)	See <a href="#">Chapter 3</a>



Ensure test area is free of foreign objects.

1. Ensure all carbon dioxide has been removed from any preserver which has been functionally tested.



If 3-way valve is not used, measuring device valve must be closed when air feed valve is open.

Damage may occur to oral inflation valve if air supply pressure entering the life preserver exceeds ten (10) psi during this test.

2. Unlock oral inflation valve and insert into rubber hose. Rotate valve to air supply position and inflate chamber. Alternately position valve between measuring device, vent and air supply until proper pressure of 2.0 psig is attained in both chambers. ■

3. The air supply shall be securely shut off and after a minimum of 15 minutes, the pressures shall be readjusted, if necessary, to the leakage test pressures. Record time.

4. Disconnect air supply and check for leaks. Ensure all valves are closed.

5. Record temperature and barometric pressure.

6. After a minimum of 4 hours after completing [step 3](#), record test pressure of both chambers. Test pressure shall not decrease to less than 1.6 psig for a life preserver chamber, from a maximum test pressure of 2.0 psig.

7. Record temperature and barometric pressure and correct test pressure for any changes in temperature and barometric pressure. Refer to [tables 18-4](#) and [18-5](#).

**EXAMPLE****UNCORRECTED TEST READING 1.70 PSI**

	TEMP.	BARO.
<b>START</b>	75° F	29.90 IN. Hg
<b>END</b>	70° F	29.70 IN. Hg
<b>DIFFERENCE</b>	- 5° F	-0.20
<b>CORRECTION</b>	+0.155	-0.098

TEMP. CORRECTION	+ 0.155
+ BARO. CORRECTION	- 0.098
CORRECTION	+ 0.057

UNCORRECTED READING	1.700 PSI
+ CORRECTION	+ 0.057
CORRECTED READING	1.757 PSI

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**Step 7 - Para 18-49**

**Table 18-4. Temperature Conversion Chart**

Temperature Difference (°F)	Correction (psi)
1	0.031
2	0.062
3	0.093
4	0.124
5	0.155
6	0.186
7	0.217
8	0.248
9	0.279
10	0.310

Rise in temperature: subtract from gage reading.  
Fall in temperature: add to gage reading.



Do not submerge LPU-23C/P life preservers in water to check for leaks.

8. If pressure of chamber is below 1.6 psig inflate to leakage test pressure and coat with a soap solution to locate leaks. Mark leak areas. Rinse preserver with fresh water, air dry and repair in accordance with [paragraph 18-64](#).

9. Deflate preserver in accordance with [paragraph 18-37](#).

10. Ensure that inflation valve lever is cocked. Install CO<sub>2</sub> cylinder in accordance with [paragraph 18-55](#).

**18-50. RECORDS UPDATING.** Make necessary entries on appropriate form in accordance with OPNAV-INST 4790.2 Series.

### 18-51. CLEANING AND SERVICING.

18-52. Cleaning and servicing consist of cleaning the life preserver, case, container and/or pouch, installation of the inflation valve protective covers and CO<sub>2</sub> cylinders and, when required, safety wiring of the inflation valve actuating lever.

**18-53. CLEANING OF LIFE PRESERVER CASINGS/BLADDERS.** To clean life preservers, machine washing is preferred on casings, containers, and pouches. Alternate method is by hand. Remove any survival items and other detachable items and proceed as follows:

**Table 18-5. Barometric Pressure Conversion Chart**

Press. Diff. (inHG)	Corr. (psi)	Press. Diff. (inHG)	Corr. (psi)	Press. Diff. (inHG)	Corr. (psi)	Press. Diff. (inHG)	Corr. (psi)	Press. Diff. (inHG)	Corr. (psi)
0.01	0.005	0.16	0.078	0.31	0.152	0.46	0.225	0.61	0.299
0.02	0.010	0.17	0.083	0.32	0.157	0.47	0.230	0.62	0.304
0.03	0.015	0.18	0.088	0.33	0.162	0.48	0.235	0.63	0.309
0.04	0.020	0.19	0.093	0.34	0.167	0.49	0.240	0.64	0.314
0.05	0.025	0.20	0.098	0.35	0.172	0.50	0.245	0.65	0.319
0.06	0.030	0.21	0.103	0.36	0.176	0.51	0.250	0.66	0.323
0.07	0.035	0.22	0.108	0.37	0.181	0.52	0.254	0.67	0.328
0.08	0.040	0.23	0.113	0.38	0.186	0.53	0.260	0.68	0.333
0.09	0.045	0.24	0.118	0.39	0.191	0.54	0.265	0.69	0.338
0.10	0.049	0.25	0.123	0.40	0.196	0.55	0.270	0.70	0.343
0.11	0.054	0.26	0.127	0.41	0.201	0.56	0.275	0.71	0.348
0.12	0.060	0.27	0.132	0.42	0.206	0.57	0.279	0.72	0.353
0.13	0.064	0.28	0.137	0.43	0.211	0.58	0.284	0.73	0.358
0.14	0.069	0.29	0.142	0.44	0.216	0.59	0.289	0.74	0.363
0.15	0.073	0.30	0.147	0.45	0.221	0.60	0.294	0.75	0.368

Rise in pressure: add to gage reading.  
Fall in pressure: subtract from gage reading.

## Materials Required

Quantity	Description	Reference Number
As Required	Detergent, General Purpose	MIL-D-16791 NIIN 00-282-9699
As Required	Cloth, Lint-Free Type II	MIL-C-85043 NIIN 00-044-9281
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589



Solvents are not to be used in cleaning life preservers.

1. Prepare solution of detergent (MIL-D-16791) consisting of 1/4 to 1/2 ounce of detergent per gallon of water.

2. Apply cleaning solution to soiled area with a spray or sponge.

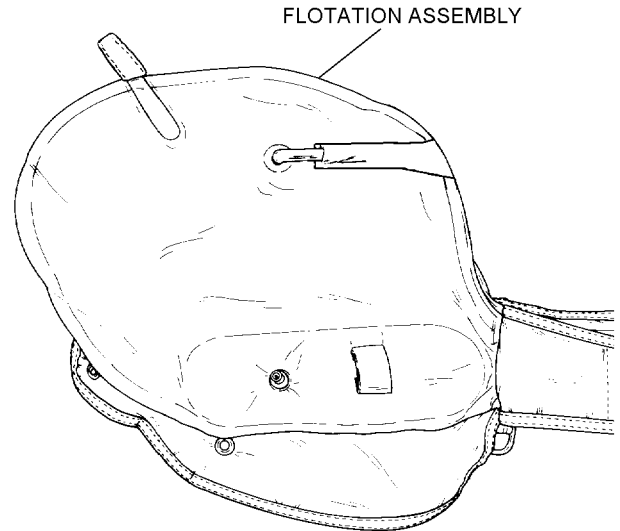
3. Allow solution to remain on surface for several minutes, then agitate with a soft brush or rag.

4. Rinse surface thoroughly with water; wipe with a cloth or sponge. Repeat this application until surface is free from all solution.

5. Dry casing before use and dry bladder with a lint-free cloth (MIL-C-85043). Apply a light coating of talc (MIL-T-50036A).

**18-54. INSTALLATION OF INFLATION VALVE PROTECTIVE COVERS.** To install inflation valve protective covers, proceed as follows:

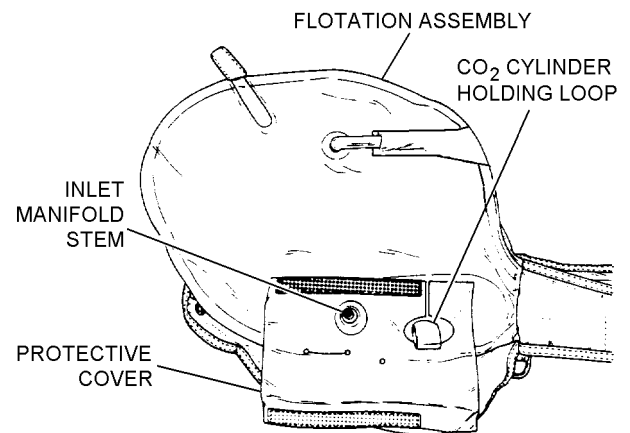
1. Open life preserver flotation assembly, then position on a flat surface.



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**Step 1 - Para 18-54**

2. Place inflation valve protective cover upon the life preserver. Ensure that inlet manifold stem hole and CO<sub>2</sub> cylinder holding loop hole are aligned according to figure 18-7.



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**Figure 18-7. Installation of Inflation Valve Protective Cover**

**18-55. INSTALLATION OF CO<sub>2</sub> CYLINDERS.** To install cylinders proceed as follows:

## Support Equipment Required

Quantity	Description	Reference Number
1	Scale (Gram)	A-A-52021-1 NIIN 00-514-4117 or equivalent
1	Die, Cylinder Thread Chaser	1842-008-01 (CAGE 03688) NIIN 00-069-4040

Materials Required

Quantity	Description	Reference Number
As Required	Cylinder, CO <sub>2</sub> Type III, 35-Gram	MIL-C-25369C
1	Seat Seal, O-Ring, Multi	NIIN 01-046-3300

CAUTION

Ensure that packaging cord is not pinched between piercing pin and actuating lever. If there is free play in actuating lever when in its cocked position, packaging cord loop is pinched. If necessary, reinstall in accordance with [paragraph 18-78](#).

1. Weigh a charged CO<sub>2</sub> cylinder and compare the minimum stamped weight with the scale weight. Discard and replace cylinder if scale weight is 2 grams less than minimum stamped weight.

2. To assure a firm cylinder seat, conduct a cylinder thread count. Threaded portion of cylinder neck shall contain a minimum of seven full threads to assure a firm cylinder seat within valve body. Any cylinder found with less than seven full threads shall be discarded. See [figure 18-8](#).

CAUTION

Steel threads on CO<sub>2</sub> cylinder can cause damage to aluminum threads on inflator if cylinder is not carefully threaded. If binding occurs during installation on cylinder, use thread chaser dye on cylinder thread to cut free excessive plating. Reinstall cylinder. If binding still occurs, replace cylinder.

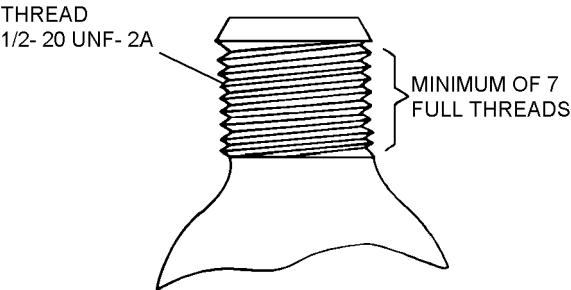
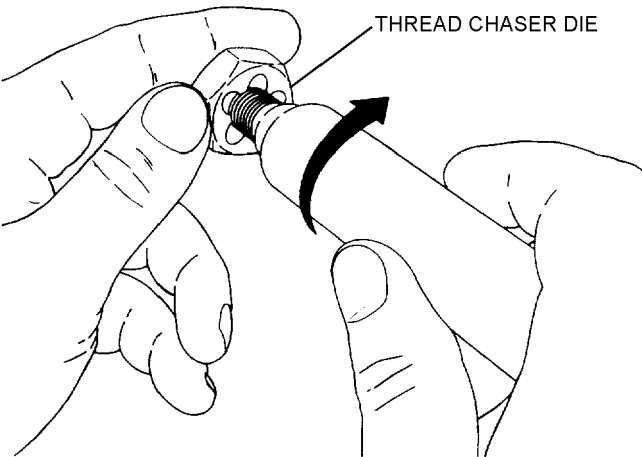


Figure 18-8. Cylinder Thread Count

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3. Using the cylinder thread chaser die, turn the thread chaser to the full extent of the threads on the CO<sub>2</sub> cylinder to cut free any excessive plating covering the threads.



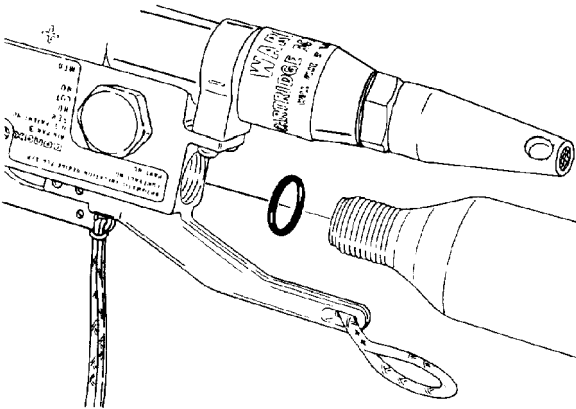
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Step 3 - Para 18-55

NOTE

During intermediate inspection, inspect condition of O-ring and replace as necessary. After each functional inspection, the O-ring seal shall be replaced.

4. Insert new O-ring and turn CO<sub>2</sub> cylinder into inflator body as far as hand twisting will permit.



R0055004

Step 4 - Para 18-55

**NOTE**

Check for secure cylinder fit and ensure that CO<sub>2</sub> cylinder passes through the CO<sub>2</sub> cylinder holding patch loop.

5. Close inflation valve protective covers; the secure with hook and pile tape provided.

**18-56. BATTERY REPLACEMENT.** To replace batteries, proceed as follows:

**NOTE**

Only FW14 batteries, part number 849AS103, NIIN 01-334-0724, requisitioned through the CAD/PAD ordering process are authorized for use in the FW98 Automatic Inflation Device. NAVSURF-WARCENDIV Indian Head MD must approve substitute batteries in writing before installation.

Materials Required

Quantity	Description	Reference Number
2	Battery, 6-Volt Manganese Dioxide	849AS103 NIIN 01-334-0724 (FW14)

Support Equipment Required

Quantity	Description	Reference Number
1	Multimeter (Digital)	8600A or equivalent (CAGE 89536) NIIN 01-010-0088
1	Wrench, 3/4-Inch	—

**WARNING**

No foreign object should be inserted into sensor plug ports for any reason.

1. Remove sensor plug cap using a standard 3/4-inch wrench.

**WARNING**

Battery may explode if recharged or disposed of in fire.

**CAUTION**

Never replace one battery. Always replace the pair.

2. Remove old batteries and discard.

3. Refer to NAVAIR 11-100-1.1 for battery manufacture code dates. Record date of manufacture and date of installation of new batteries in accordance with OP-NAVINST 4790.2 Series.

**NOTE**

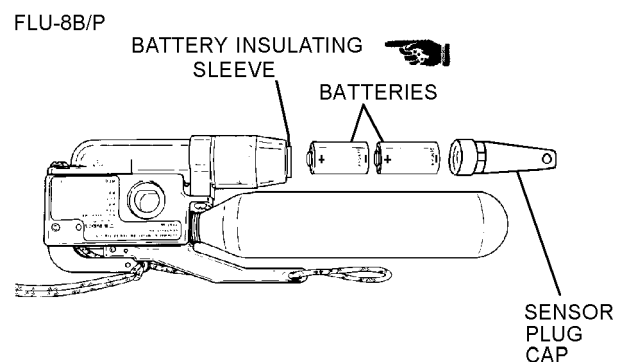
Manganese Dioxide batteries (FW14) have a life of three years from the date of manufacture. Do not install battery if its life expires prior to the next scheduled Calendar Inspection.

- 3A. Check new batteries for leakage, corrosion, dents, depressions, and cracks. If found the batteries shall be rejected.

- 3B. Using multimeter set-up to measure dc voltage, check each battery for shorted casing. Place one lead on the positive terminal and the other on the battery case. If a voltage reading of 0.1 volts dc or higher is obtained, reject the battery for use and discard battery in an appropriate manner.

4. Install batteries in accordance with figure 18-9.

5. Install sensor plug cap. Plug shall be held in square alignment with housing while engaging threads.



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**Figure 18-9. Battery Installation Arrangement**



Ensure that sensor plug cap is torqued to correct value. Do not overtighten sensor plug cap.

6. Torque FLU-8B/P sensor plug cap to 15 lb-ins using 3/4-inch socket and torque wrench.

7. Test batteries in accordance with paragraph 18-42.

18-57. REPAIR/REPLACEMENT.

18-58. This section contains instructions for the repair or modification of various components or subassemblies of life preservers to ensure that appropriate items of equipment remain in Ready For Issue (RFI) status. Reference numbers for parts which are defective, corroded or worn and require replacement are included in the applicable paragraph of this section. Other replacement parts, such as carrying cases and personal survival equipment, are listed in the applicable table of each chapter. Procedures are applicable to the type life preserver described in parentheses following the title of the repair or modification, or before a step.

18-59. Replacement of easily removed assembly components such as CO<sub>2</sub> inflation valves and survival items are authorized in addition to repair and replacement procedures documented in this section. The life preserver shall be subjected to a functional and leakage test each time CO<sub>2</sub> inflation valves are removed and replaced for any reason, and each time inflation valve gaskets are replaced.

18-60. DETERMINATION OF REPAIRABILITY.

Patching of holes, cuts, tears or punctures 1-inch square or less are the only repairs authorized in a life preserver bladder. Life preserver shall be considered beyond repair for any of the following reasons:

- 1. Porous fabric areas on flotation bladder.

2. Leakage test failure resulting from other than repairable cut, tear or puncture.

3. Holes, cuts, tears or punctures within 1-inch of flotation bladder seams.

4. Deterioration of the rubberized fabric caused by oil, grease, or any other foreign substance.

5. Deterioration of the rubberized fabric caused by a heavily mildewed condition.

18-61. CASING REPAIR PROCEDURES. To repair casings, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Thread, Nylon, High Temperature Resistant, Sage Green -or-	MIL-T-83193 NIIN 00-405-2252
As Required	Thread, Nylon, Type II, Size E, Sage Green	V-T-295 NIIN 00-204-3884
As Required	Cloth, Aramid, Non-melting, Type 456, Class I, Sage Green	MIL-C-83429 NIIN 01-147-2064
As Required	Tape, Hook, Sage Green, Type II	MIL-F-21840 NIIN 00-405-2266
As Required	Tape, Pile, Sage Green, Type II	MIL-F-21840 NIIN 00-405-2263

1. Minor holes, rips, tears, or abrasions in casing assembly may be repaired if they do not exceed 2 inches.

2. Repair or replace loose or damaged hook and pile tape as required.

3. Remove bladder in areas being repaired.

4. For all repairs plus loose or broken stitching use 6 to 8 stitches per inch and back stitch one half inch.

5. Casing assembly worn beyond economical repair shall be discarded.

**18-62. CASING GROMMET REPLACEMENT PROCEDURES.** To replace casing grommet, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Punch, Cutting, 3/16"	3GGG-P-833 NIIN 00-180-0941
1	Pencil, Solder	W-S-570 NIIN 00-204-3855

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, Sage Green, 1" Wide	MIL-T-5038 NIIN 00-753-6144
	-or-	
As Required	Cloth, Nylon, Polyurethane-Coated, Type I	MIL-C-83489 NIIN 01-335-3129
2	Grommet, Brass, Size 00	MS20230B20 NIIN 00291-0302

1. Remove bladder in areas being repaired.

2. Remove loose grommet.

3. Reinforce worn grommet hole in casing by using either nylon tape or polyurethane-coated cloth.

a. Prepare reinforcing material.

(1) Cut and sear edges of a 1-inch piece of nylon tape.

or

(2) Cut a 1 1/2 x 1 1/2-inch piece of polyurethane-coated cloth and fold under 1/4 inch on all edges.

b. Sew reinforcing material to outside of casing, centered where possible over original grommet location. Use a cross boxstitch with 6 to 8 stitches per inch, 1/6 inch from edge.

4. Install new grommet.

a. Locate original grommet hole. Cut hole in reinforcing material using 3/16-inch cutting punch.

b. (For nylon tape only.) Carefully sear hole to prevent fraying using solder pencil.

c. Install grommet using 00 grommet setter and base.

**18-63. CEMENTING LIFE PRESERVERS.** All cementing of life preservers shall be performed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Toluene	TT-T-548 NIIN 00-281-2002
	-or-	
As Required	Methyl Ethyl Ketone (MEK)	TT-M-261 NIIN 00-281-2762
As Required	Talc, Technical	MIL-T-50036A NIIN 01-089-9589
As Required	Adhesive, Polyurethane (Note 1)	MIL-A-47315 P/N UR-1092 NIIN 01-375-7855

Notes: 1. Polyurethane adhesive (UR-1092) may be open purchased from the following source (minimum order \$150.00):

Clifton Adhesives Inc.  
Burgess Place  
Wayne, NJ 07473  
201-694-0845

Support Equipment Required

Quantity	Description	Reference Number
1	Roller, Wooden	GGG-R-00620 NIIN 00-243-9401
1	Brush, Disposable	NIIN 00-514-2417



Do not use toluene or MEK near open flame, heat or electrical sparks. Avoid prolonged contact with skin or breathing of fumes. Use only in a well ventilated area.



Use only polyurethane adhesive on heat sealed polyurethane cloth LPU-23C/P Life Preservers.

NOTE

Toluene shall be the primary solvent used in the fabrication or repair of this assembly. MEK may be used if toluene is not available. Always use sparingly and wipe up excess solvents; do not allow to dry by evaporation.

Toluene or MEK must be applied vigorously to life preserver material over three years old in order to reactivate the material prior to cementing. Pigment from the material coloring staining a cloth rubbed over the treated surface will indicate the material has been reactivated. Cement shall be applied immediately after the surface has dried.

1. Clean both surfaces to be cemented with four applications of toluene or MEK. Apply toluene or MEK with back-and-forth strokes on the first and third applications, and one-way strokes on the second and fourth applications. Allow area to dry between applications.



The effective active period of adhesive mixture composed of polyurethane and an accelerator is eight (8) hours. Do not use mixture if older than eight hours.

2. Prepare only enough mixture for 8 hours. Dispose of any remaining mixture.

3. Using a disposable brush, apply cement to completely cover surfaces to be cemented. Use long, one direction strokes and complete each surface before cement becomes tacky as the brush may pull tacky cement from the surface. Allow to dry for 10 minutes.

4. Apply a second coat of cement as in [step 3](#). Use brush strokes perpendicular to the original direction.

5. When second coat of cement has become tacky, place pieces together. If cemented area has a cut or tear, butt edges of damage before applying patch. Roll out bubbles with a wooden roller.

6. Allow cement to cure a minimum of 48 hours.

7. Dust area with talc (MIL-T-50036A).

**18-64. PATCHING LIFE PRESERVERS.** Life preserver is not repairable if it has holes, cuts, tears, or punctures over one-inch square. Patching of life preserver shall be performed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Nylon, Polyurethane-Coated, Type I	MIL-C-83489 NIIN 01-335-3129



**CAUTION**

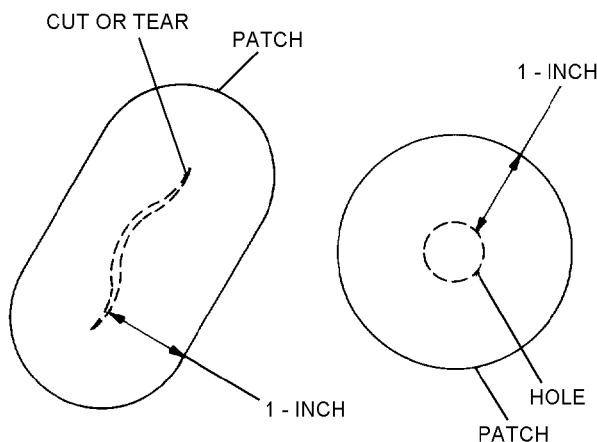
Use only polyurethane adhesives and polyurethane-coated cloth patches on polyurethane-coated LPU-23C/P life preserver assemblies.

**NOTE**

Select patch color as near as possible to color of life preserver being repaired.

Use of cloth from BCM raft/life preservers is authorized for repair with two exceptions. Inflatables condemned for contamination (oil, grease, etc.) and ALSS equipment involved in mishaps shall not be used for repairs.

1. Cut a rounded patch 1 inch larger than damage on all sides.



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**Step 1 - Para 18-64**

2. Center patch over damage and trace an outline of patch on fabric.

3. Cement patch to damaged area in accordance with [paragraph 18-63](#).

4. Dust area with talc (MIL-T-50036A).

5. Perform a leakage test.

**18-65. INSPECTION RECORD PATCH.**

**NOTE**

The 28th In-Service Management Panel meeting for Aviation Life Support Systems rescinded the requirement for the packer to sign the Inspection Record Patch on life preservers. The requirement for all other documentation remains unchanged. The reason for this change is that most history patches are unreadable and the packer's and inspector's names are documented on Aviation Crew Systems Records.

**18-66. REPLACEMENT OF ORAL INFLATION VALVE.** To replace the oral inflation valve, proceed as follows:

**NOTE**

Replacement oral inflation valves can only be obtained through salvage of BCM'ed or surveyed inflatable survival equipment.

**Materials Required**

Quantity	Description	Reference Number
1	Valve, Oral Inflation	—
As Required	Cement, Polychloroprene	MIL-A-5540 NIIN 00-142-9913
As Required	Brush, Disposable	NIIN 00-541-2417
As Required	Toluene	TT-T-548 NIIN 00-281-2002
	-or-	
As Required	Methyl Ethyl Ketone (MEK)	TT-M-261 NIIN 00-281-2762

Figure 18-10 Deleted.

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**CAUTION**

Only toluene or MEK shall be used to clean oral inflation valve and tube. Only Polychloroprene cement (MIL-A-5540, NIIN 00-142-9913) shall be used to cement oral inflation valve into oral inflation tube.

1. Carefully cut through metal band securing oral inflation valve to oral inflation tube and remove metal band and oral inflation valve.

2. If the tip of the oral inflation tube was damaged during removal of valve, trim off damaged section.

3. Clean both surfaces to be cemented with toluene or MEK. Allow those areas to dry.

4. Using a small disposable brush, carefully apply a small amount of Polychloroprene cement to the surfaces of the tube and the valve which are to be cemented together.

5. Immediately place the oral inflation valve into oral inflation tube. Oral inflation valve should be in-

serted up to valve shoulder. Inspect for proper application/cement.

6. Tightly wrap the cemented portion of the oral inflation tube with cord or wire and allow to cure for 48 hours before removing wrap.

7. Perform leakage test in accordance with [paragraph 18-47](#).

**18-67. RECEMENTING OF BLADDER FIN SEAMS.** Recementing of seams is not authorized.

**CAUTION**

Recementing of fin seams is not authorized for heat sealed LPU-23C/P Life Preservers.

18-68. Dispose of LPU-23C/P flotation assembly after usable parts have been salvaged.

**18-69. DELETED**

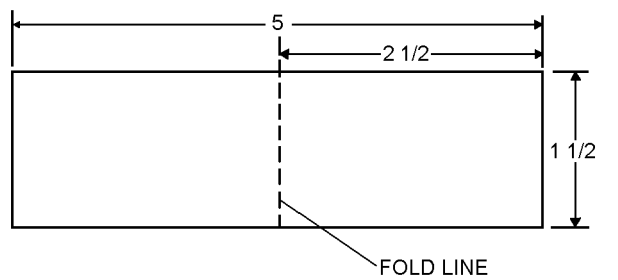
**Figure 18-11. Deleted**

**18-70. FABRICATION OF SLIP-ON POCKETS FOR LIFE PRESERVER HARDWARE.** To fabricate slip-on pockets for life preserver hardware, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Nylon, Polyurethane-Coated, Type I	MIL-C-83489 NIIN 01-335-3129
As Required	Thread, Nylon Size E	V-T-295 NIIN 00-204-3884

1. Cut two pieces of coated nylon cloth as shown.



Step 1 - Para 18-70

R0070001

2. Fold piece of cloth in half along fold line.
3. Sew two sides adjacent to fold forming a pocket. Use stitch type 301 stitching 8 to 10 stitches per inch.
4. Repeat steps 2 and 3 for other piece of cloth.
5. When packing life preserver, slip pockets over applicable pieces of hardware.

**18-71. REPLACEMENT OF FLARE AND DYE MARKER POUCH SNAPHOOKS.** To replace a broken snaphook, proceed as follows:

Materials Required

Quantity	Description	Reference Number
12 inches	Cord, Nylon, Type I	MIL-C-5040 NIIN 00-014-6699

1. Cut through ring portion of snaphook.
2. Remove snaphook and discard.
3. Pass end of cord through webbing loops on pouch and preserver ring.
4. Secure cord ends with binder knot, cut excess cord, and sear ends.

**18-72. REPLACEMENT OF COLLAR LOBE SNAPHOOKS.** To replace the collar lobe snaphook or webbing which is attached to the snaphook, proceed as follows:

Materials Required

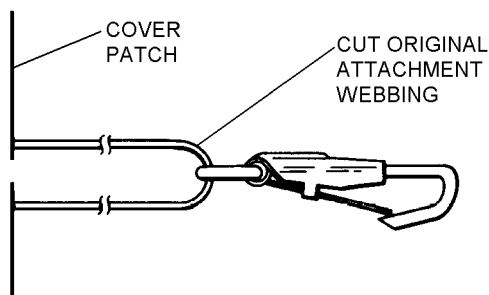
Quantity	Description	Reference Number
As Required	Cloth, Nylon, Polyurethane-Coated, Type I	MIL-C-83489 NIIN 01-335-3129
As Required	Webbing, Textile, Woven Nylon, Type Ia, 3/4-inch	MIL-W-4088H NIIN 00-782-3224
2	Snaphook, CWBC1	MIL-S-43770/1 NIIN 01-187-9402
As Required	Thread, Nylon, Size E, Type I or II	V-T-295 NIIN 00-204-3884
As Required	Toluene	TT-T-548 NIIN 00-281-2002
-or-		
As Required	Methyl Ethyl Ketone (MEK)	TT-M-261 NIIN 00-281-2762
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589

NOTE

Procedural step 1 is for replacement of worn webbing and broken snaphook. Step 2 is for replacement of the snaphook patch assembly.

1. To replace worn webbing and broken snaphook, proceed as follows:

a. Cut original attachment webbing at point where it passes through eye of snaphook and sear ends.



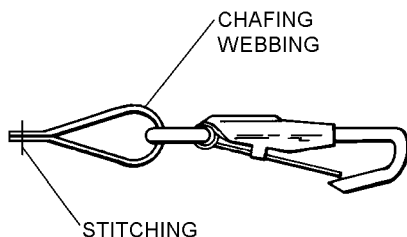
R007201A

**Step 1a - Para 18-72**

b. Replace original snaphook with copper alloy wire snaphook.

c. Cut one 2-inch length and one 1 1/2-inch length of nylon webbing and sear ends.

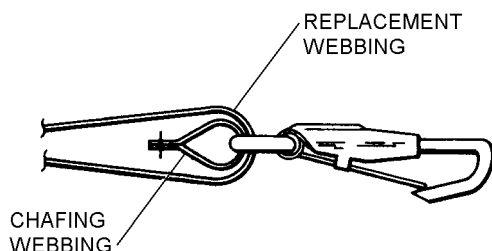
d. Pass the 1 1/2-inch length of webbing through snaphook eye and stitch one row of stitching, 10 to 12 stitches per inch, close to seared ends, securing chafing webbing to snaphook eye.



R007201D

**Step 1d - Para 18-72**

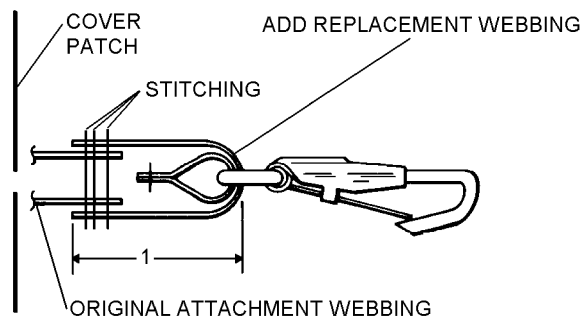
e. Pass the 2-inch length of webbing (replacement webbing) through snaphook eye and over chafing webbing.



R007201E

**Step 1e - Para 18-72**

f. Sandwich each side of original webbing between chafing webbing and replacement webbing. Stitch across webbing and backstitch forming three rows of stitching. The finished length of new webbing attachment shall be approximately 1 inch.



R007201F

**Step 1f - Para 18-72**

g. Repeat steps a through f for opposite side.

2. To replace the snaphook patch assembly, proceed as follows:

**WARNING**

Do not use toluene or MEK near open flame, heat, or electrical sparks. Avoid prolonged contact with skin or breathing of fumes. Use only in well-ventilated area.

**NOTE**

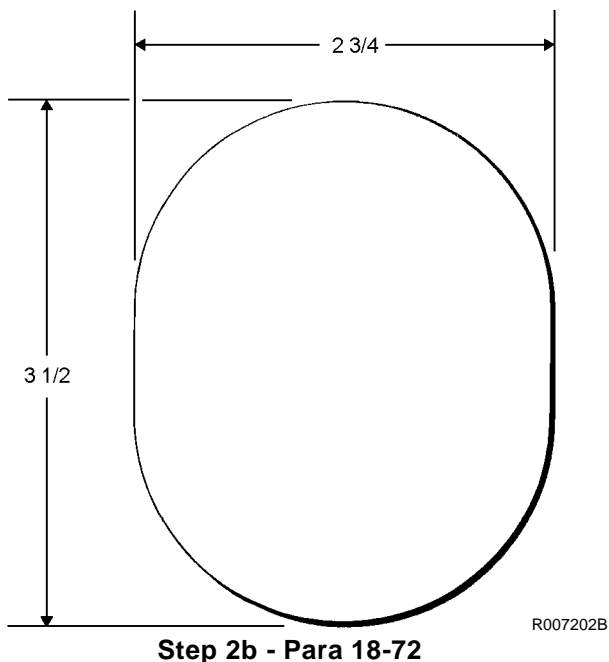
Toluene shall be the primary solvent used in the fabrication or repair of this assembly. MEK may be used if toluene is not available. Always use solvents sparingly and wipe up excess solvents; do not allow to dry by evaporation.

a. Apply toluene or MEK to loosen patches. Remove patches from life preserver flotation bladder.

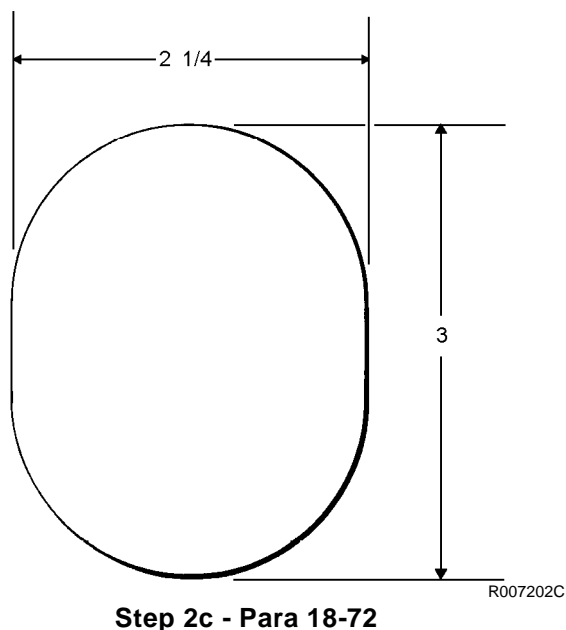


Only Polyurethane adhesives and Polyurethane-coated cloth and patches shall be used on Polyurethane-coated LPU-23C/P life preserver assemblies.

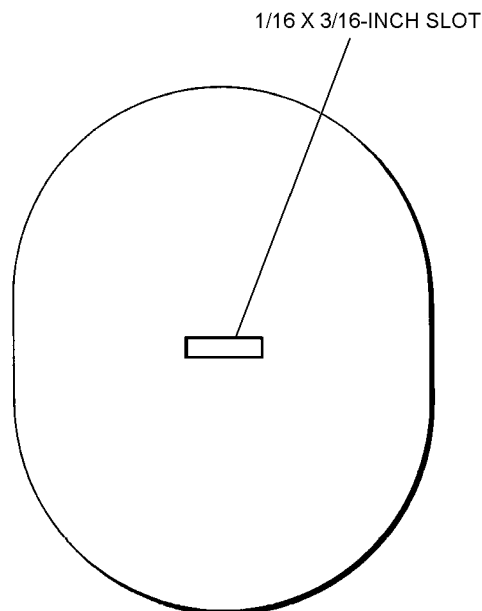
b. Fabricate cover patch from coated cloth.



c. Fabricate base patch from coated cloth.

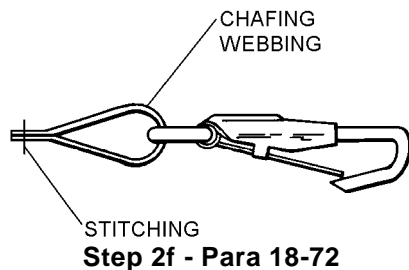


d. Cut a  $\frac{1}{16} \times \frac{3}{16}$ -inch slot in cover patch.



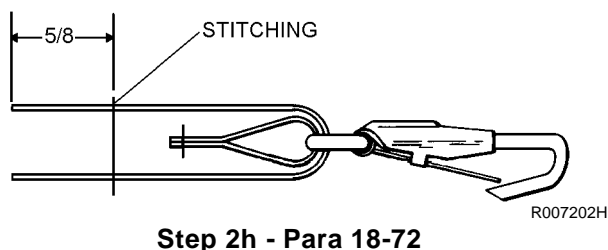
e. Cut one  $2 \frac{1}{2}$ -inch length and one  $1 \frac{1}{2}$ -inch length of nylon webbing and sear ends.

f. Pass the  $1 \frac{1}{2}$ -inch length of webbing through snaphook eye and stitch one row of stitching, 10 to 12 stitches per inch, close to seared ends, securing chafing webbing to snaphook eye.

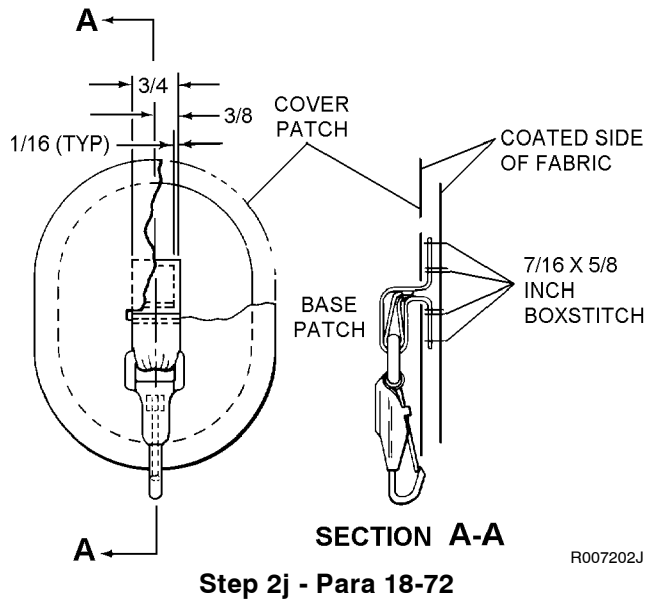


g. Pass  $2 \frac{1}{2}$ -inch length of webbing through snaphook eye and over chafing webbing.

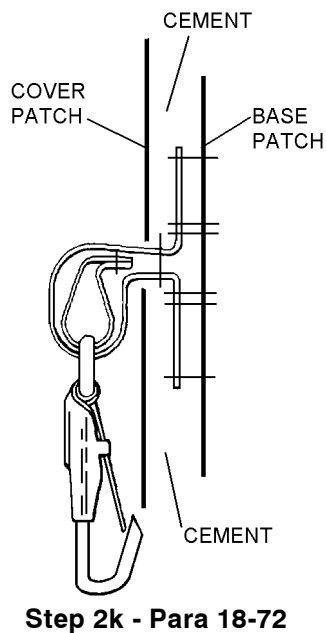
h. Sew a single row of stitching across webbing approximately  $\frac{5}{8}$  inch from end of webbing.



j. Insert webbing through slot opening in cover patch and sew a 7/16 x 5/8-inch boxstitch on each end of webbing to base patch.



k. Cement cover patch to base patch in accordance with paragraph 18-63.



l. Cement base patch to collar lobe on life preserver in accordance with paragraph 18-63.

m. Dust area with talc.

n. Repeat steps a through m for opposite side.

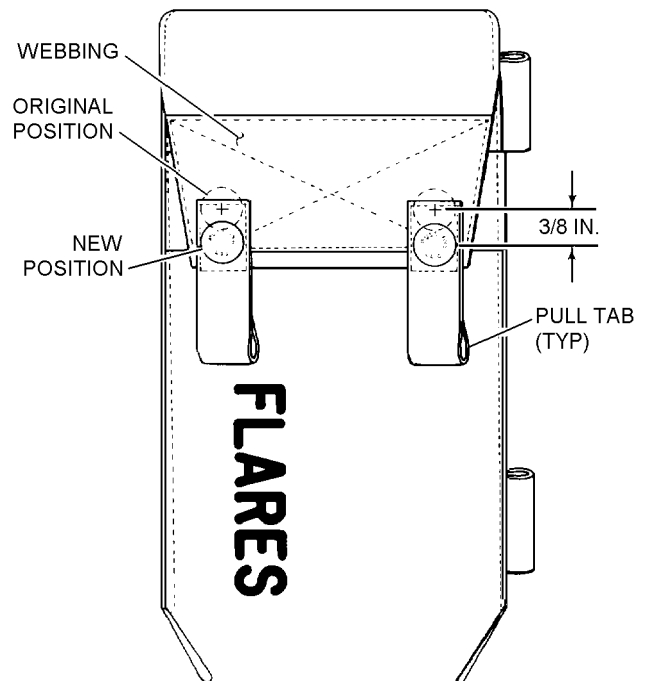
**18-73. FLARE POUCH REPAIR.** To repair flare pouch which will not close or is extremely difficult to close with flares installed, proceed as follows:

**Materials Required**

Quantity	Description	Reference Number
As Required	Thread, Nylon, Size E	V-T-295 NIIN 00-204-3884
2	Socket, Snap Fastener	MS27983-2 NIIN 00-945-2577
2	Cap, Snap Fastener	MS27983-1 NIIN 00-891-9073
3 1/2 inches	Webbing, Type VIII	MIL-W-4008

1. Remove both sets of sockets, caps, and pull tabs from pouch closure flap. Save pull tabs.

2. Position MIL-W-4008 Type VIII webbing on outside surface of pouch flap. Cut and sear webbing ends to match contour of flap end. Boxstitch webbing to flap using size E nylon thread (V-T-295). See figure 18-12.



**Figure 18-12. Flare Pouch Repair**

3. Reposition both sets of sockets, caps, and pull tabs 3/8 inch closer to flap end. Use original pull tabs.

18-74. DISASSEMBLY OF THE LIFE PRESERVER.

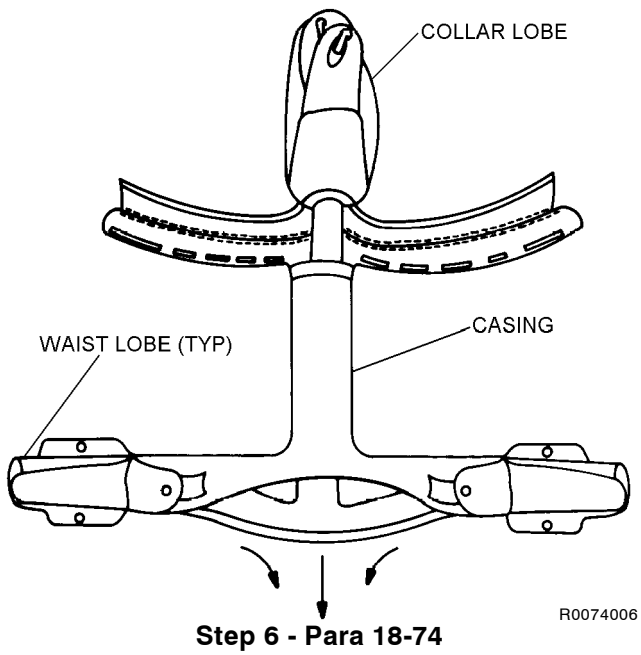
To disassemble the life preserver for bladder or case repairs, proceed as follows:

NOTE

Life preserver shall be disassembled only to the extent necessary to perform required maintenance or inspection.

The uni-directional snap fastener socket is installed with the dot on its button oriented to the side of the fastener on which lift must be applied to disengage socket from the snap fastener stud.

- 1. Disengage uni-directional snap fasteners securing waist lobes to casing by applying lift on the dot-side snap fastener buttons.
- 2. Open casing and remove both inflation assemblies.
- 3. Reattach cap nuts to valve stems.
- 4. Release all hook and pile tape fasteners.
- 5. Fold collar lobe and waist lobes to width of casing.
- 6. Hold casing at collar and pull flotation assembly down and out of casing, one lobe at a time.



18-75. REASSEMBLY OF THE LIFE PRESERVER.

To reassemble the life preserver proceed as follows:

Materials Required

Quantity	Description	Reference Number
3 feet	Cord, Nylon, Type III	MIL-C-5040 NIIN 00-240-2146
2	Valve Stem Kit (Note 1)	105AS100-6 (CAGE 30003) NIIN 00-113-8290

Notes: 1. Valve Stem Kit, P/N 105AS100-6, NIIN 00-113-8290, contains one top and one bottom gasket.

- 1. Attach one end of a 3-foot length of Type III nylon cord to snaphook on collar lobe.



Ensure flotation assembly is not twisted in casing channels.

- 2. Insert free end of nylon cord through back channel of casing and pull collar lobe into casing. Remove nylon cord from collar snaphook. Insert waist lobes through casing waist channels.

- 3. When flotation assembly is in casing assembly, ensure that it is in proper configuration and is not twisted inside casing.



4. Align uni-directional snap fastener sockets of flotation assembly waist lobe attachment patch with snap fastener studs of casing assembly and secure waist lobes to casing assembly.

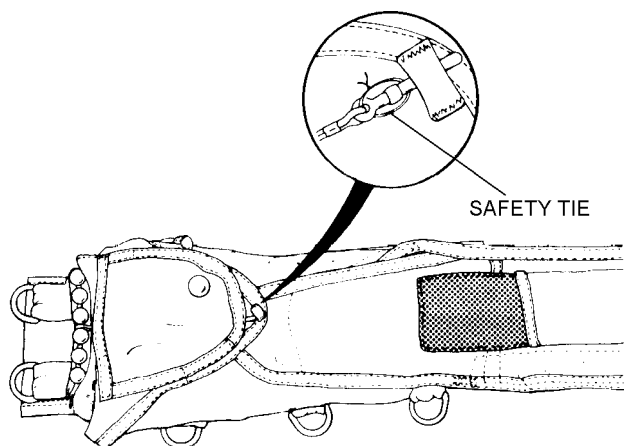
5. Remove old inflation stem gaskets and replace with new gaskets. Reinstall inflation assemblies and protective covers. Pack life preserver in accordance with applicable paragraph.

**18-76. REPLACEMENT OF BEADED INFLATION HANDLE ASSEMBLY.** To replace the beaded inflation handle, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Handle, Beaded, Inflation	975AS121-11 NIIN 01-120-4752 (CAGE 30003)
As Required	Thread, Nylon, Size E	V-T-295 NIIN 00-204-3884

1. Open snap fastener on locking pin cover; then cut and remove safety tie securing eye of locking pin to retaining loop. Carefully remove locking pin from pin keeper and retaining loop.



Step 1 - Para 18-76

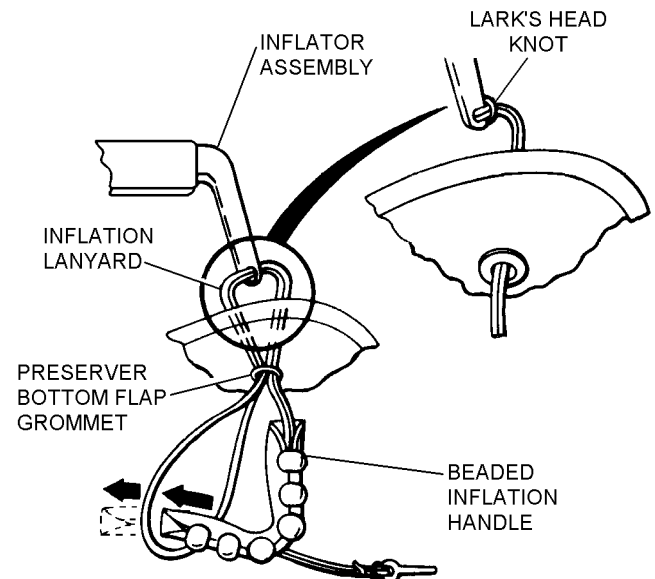
R0076001

2. Open flaps and unfold life preserver assembly.

3. Remove CO<sub>2</sub> cylinder from CO<sub>2</sub> inflator assembly. Retain CO<sub>2</sub> cylinder for reinstallation.

4. Remove inflation lanyard from inflator assembly; then unsnap beaded inflation handle from life preserver casing.

5. Secure new beaded handle inflation lanyard to actuating lever by passing lanyard through grommet in bottom casing flap and through hole in end of actuating lever. Pass lanyard back through grommet in bottom casing flap and form lark's head knot.



Step 5 - Para 18-76

R0076005

6. Fasten beaded inflation handle to casing with snap fasteners provided; then safety-tie beaded inflation han-

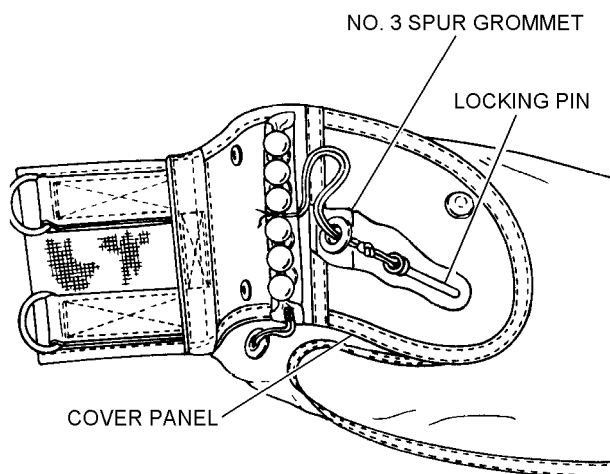
## NAVAIR 13-1-6.1-2

dle with one turn of size E nylon thread, single. Draw thread sufficiently to permit 1/2-inch  $\pm$  1/8-inch space between the middle beads and webbing on the preserver. Tie ends of both safety ties with a surgeon's knot followed by a square knot.

### NOTE

Ensure that overhand knot on locking pin lanyard is within 3/4 inch from eye of pin.

7. Route locking pin under outboard flap cover panel and through No. 3 spur grommet.



NOTE: LEFT LOBE SHOWN

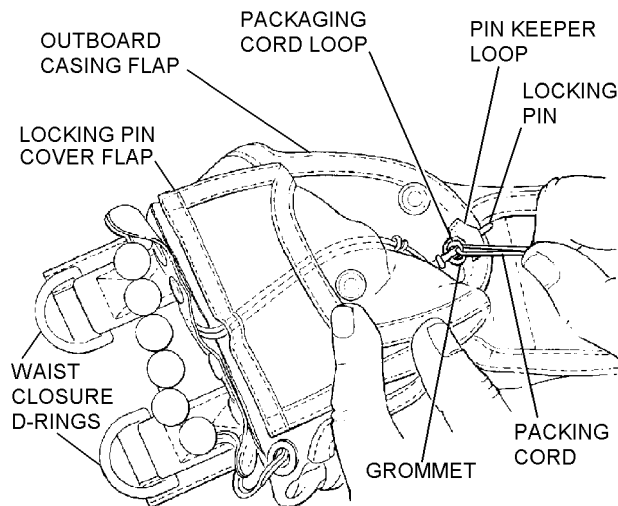
R0076007

### Step 7 - Para 18-76

### NOTE

On some late issue LPU-23C/P life preserver casings, the No. 3 spur grommet has been deleted.

8. Route the locking pin under the locking pin cover flap through the opening in the stitching at the base of the flap, through the retaining loop/packaging cord loop, and under the pin keeper loop.



(WITHOUT NO. 3 SPUR GROMMET)

NOTE: LEFT LOBE SHOWN

R0076008

### Step 8 - Para 18-76

9. Perform beaded inflation handle pull test. Refer to [paragraph 18-46](#).

10. Recock CO<sub>2</sub> inflator and install CO<sub>2</sub> cylinder.

### NOTE

Ensure that all hook and pile tapes are securely mated.

11. Pack life preserver in accordance with the applicable paragraph.

12. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

**NOTE**

FLU-8A/P Automatic Inflators shall be replaced with FLU-8B/P Automatic Inflators if found in service during scheduled maintenance.

**18-77. REPLACEMENT OF FLU-8B/P AUTOMATIC INFLATOR ASSEMBLY.** To replace damaged, overage, or spent FLU-8B/P automatic inflators, proceed as follows:

## Support Equipment Required

Quantity	Description	Reference Number
1	Socket, 9/16-inch, 6-point, or 13-mm, 6-point torque	—
1	Wrench, Torque	—

## Materials Required

Quantity	Description	Reference Number
1	Cylinder, CO <sub>2</sub> Type III, 35 Grams	MIL-C-25369
As Required	Thread, Nylon, Size A, Type I or II	V-T-295 NIIN 00-204-3803
1	FLU-8B/P Automatic Inflation Device consisting of:	FW-98 849AS153 (CAGE 30003) NIIN 01-364-4089
1	Inflator Subassembly	1612-009 (CAGE 03688)
1	Sensor Plug Cap Assembly	P/N 1813-044-02 (CAGE 03688)
1	Packaging Cord	1138-003-01 (CAGE 03688) NIIN 01-066-3357
1	Valve Stem Kit (Note 1)	105AS100-6 (CAGE 30003) NIIN 00-113-8290

## Materials Required (Cont)

Quantity	Description	Reference Number
1	Seat Seal, O-Ring, Multi	NIIN 01-046-3300
1	Sleeve, Battery Insulating (Note 2)	1122-095

- Notes:
1. Valve Stem Kit, P/N 105AS100-6, NIIN 00-113-8290, contains one top and one bottom gasket.
  2. The battery insulating sleeve is not a stocked item. After installation directed by Aircrew Systems Bulletin 976, it becomes part of the FLU-8B/P Unit. Replacement sleeves are issued by Indian Head Division, NSWC.

**WARNING**

The FLU-8B/P automatic inflator is a cartridge-activated device and will fire if immersed in fresh or salt water. This device is to be installed only on life preservers used by aircrewmembers in ejection seat type aircraft.

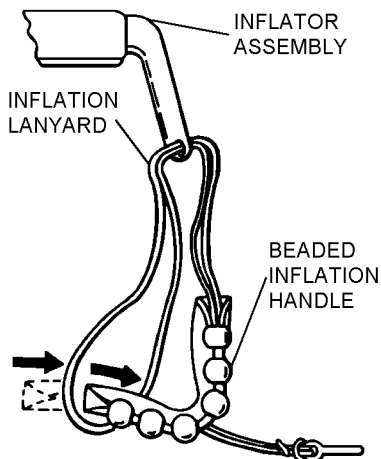
1. Remove CO<sub>2</sub> cylinder from inflator.
2. Remove inflation lanyard from inflation actuating lever; then remove damaged, over-age, or spent automatic inflation assembly.

**NOTE**

The following component parts may be re-used and retained as spares: sensor plug cap, CO<sub>2</sub> cylinder, packaging cord loop, and cap nut.

3. Handle damaged or spent FLU-8B/P inflators in accordance with Federal Regulation 49, CFR 173.55.
4. Examine inflation actuating lever, beaded handle, inflation lanyard, nylon locking pin, sensor plug cap, and packaging cord loop for fraying, corrosion, stripped threads, and other damage.

5. Remove beaded handle inflation lanyard from actuating lever by removing lark's head knot. Retain beaded inflation handle for reinstallation.



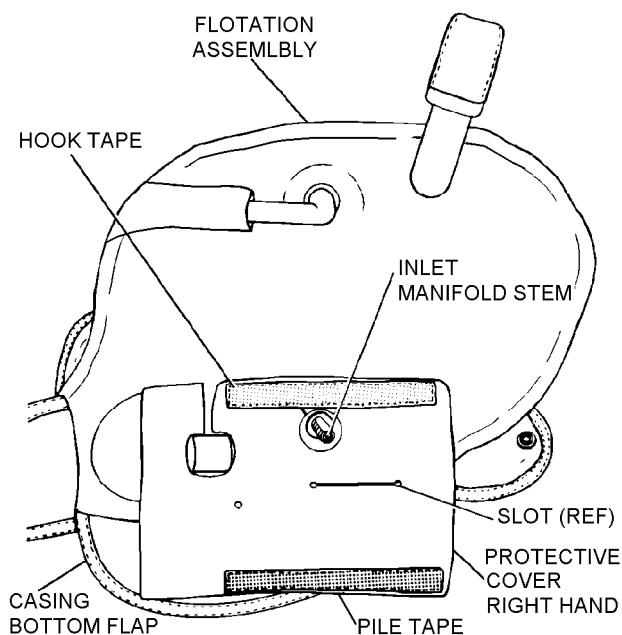
R0077005

Step 5 - Para 18-77

6. Operate manual actuating lever three or four times to ensure that lever moves freely. Check to ensure that piercing pin moves freely inside valve body and goes through center of packaging cord loop.

7. Ensure that packaging cord loop is not pinched between piercing pin and actuating lever. If there is free play in actuating lever when it is in its cocked position, packaging cord loop is pinched. If necessary, reinstall in accordance with [paragraph 18-78](#).

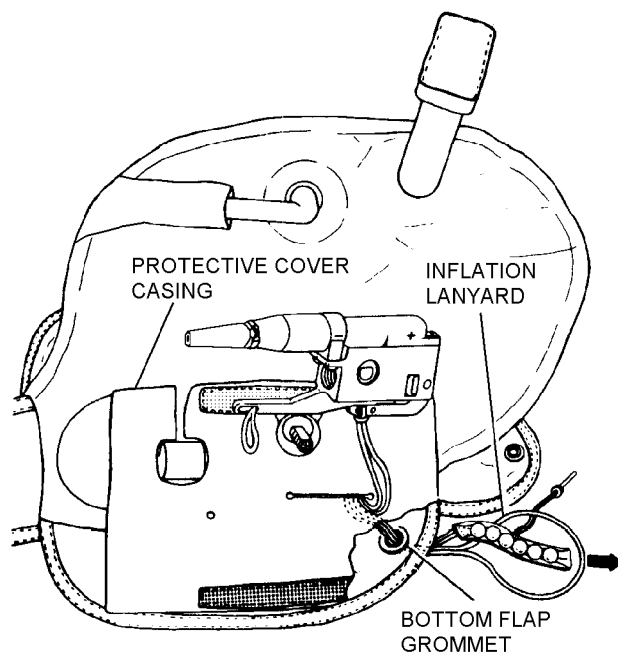
8. Install protective cover onto life preserver assembly.



R0077008

Step 8 - Para 18-77

9. Install beaded handle inflation lanyard to actuating lever by passing inflation lanyard through bottom flap grommet of life preserver assembly and protective cover. Then attach inflation lanyard to actuating lever by a lark's head knot.



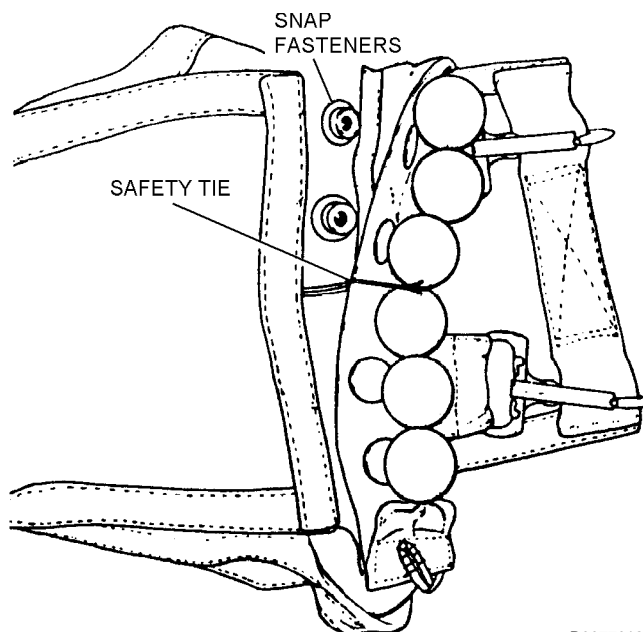
R0077009

Step 9 - Para 18-77

10. Fasten beaded inflation handle to casing with snap fasteners provided.

11. Perform beaded inflation handle pull test in accordance with [paragraph 18-46](#).

12. Replace beaded inflation handle to casing with snap fasteners; then safety-tie with size E nylon thread. Ensure that thread is drawn sufficiently to permit a 1/2-inch  $\pm$  1/8-inch space between the middle beads and webbing on preserver.



Step 12 - Para 18-77

R0077012

13. Ensure that packaging cord is not pinched between piercing pin and actuating lever. If there is free play in the actuating lever when it is in its cocked position, packaging cord loop is pinched. If necessary, reinstall in accordance with [paragraph 18-78](#).

14. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series including:

- Date of installation of each FLU-8B/P.
- Date of manufacture of each FLU-8B/P. See [figure 18-4](#).
- Lot number of each FLU-8B/P. See [figure 18-4](#).
- Serial number of each FLU-8B/P.

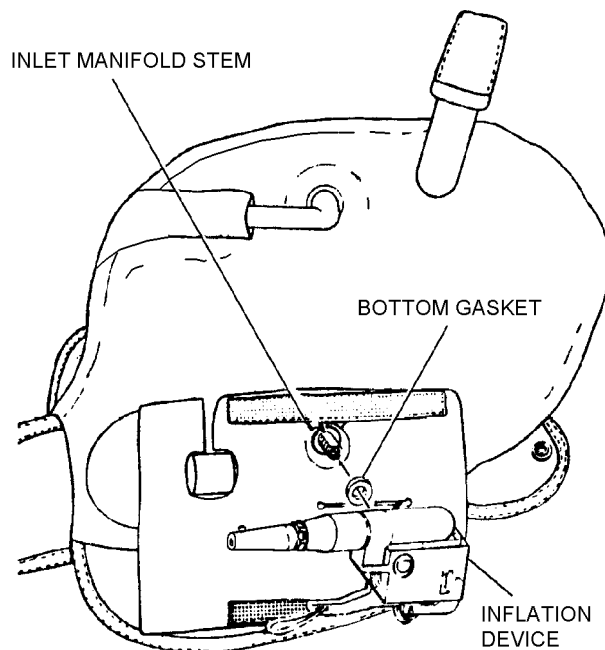
e. Date of installation of batteries.

f. Date of manufacture of batteries. Refer to [paragraph 18-41](#).

## NOTE

For data on total life of the FLU-8B/P automatic inflation assembly, refer to NAVAIR 11-100-1.1. If total life expiration date occurs before date of next scheduled calendar inspection, replace inflator assembly. The manganese dioxide batteries used in the assembly have a total life of 3 years from the date of manufacture.

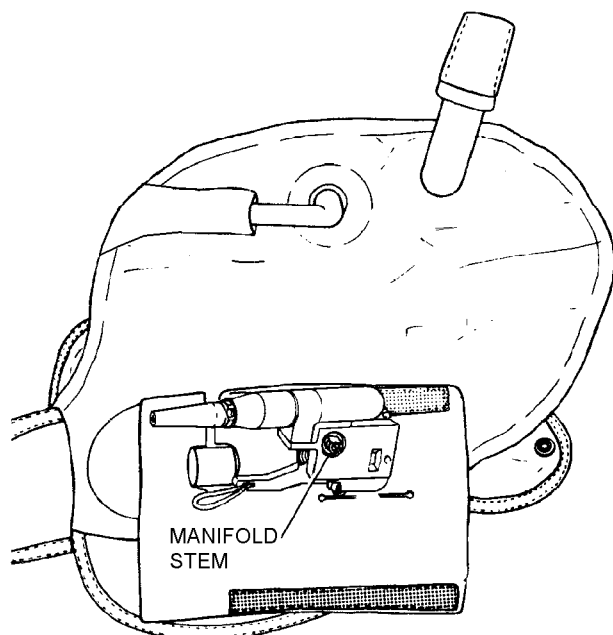
15. Install bottom gasket over manifold stem and position at manifold base. The bottom gasket has a smaller internal diameter than the top gasket.



Step 15 - Para 18-77

R0077015

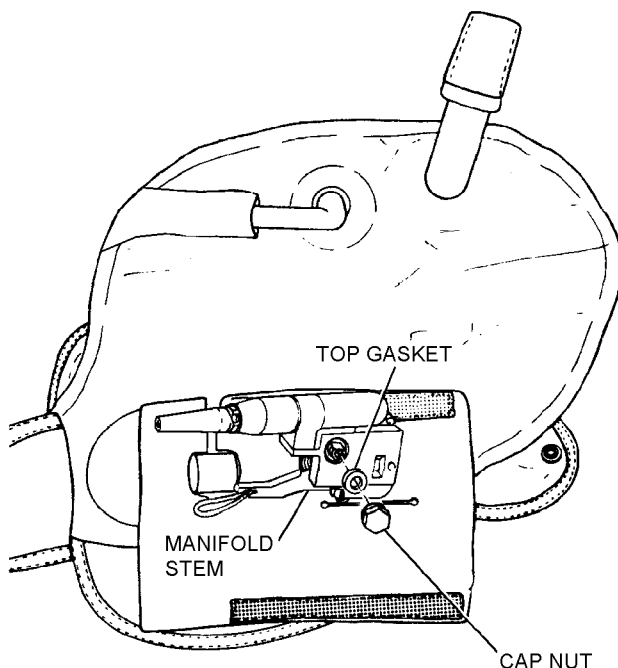
16. Install inflator body on manifold stem.



Step 16 - Para 18-77

R0077016

17. Install top gasket on manifold stem. Position on top of the inflator body.



Step 17 - Para 18-77

R0077017

**CAUTION**

Valve stem may rotate if cap nut is over torqued.

18. Install cap nut on manifold stem, securing inflator to a torque value of  $8 \pm 1$  in-lb.

19. Install batteries in accordance with [paragraph 18-56](#).

**CAUTION**

The functional test will be performed in the manual mode only. The automatic inflator (FLU-8B/P) may be operated an unlimited amount of times in the manual mode without affecting its automatic capability. Automatic actuation requires replacement of the inflation assembly.

**NOTE**

During intermediate inspection, inspect condition of O-ring and replace if necessary. After each functional inspection the O-ring seal shall be replaced.

20. Install CO<sub>2</sub> cylinder in accordance with [paragraph 18-55](#). Perform functional test in accordance with [paragraph 18-36](#).

21. Deflate life preserver in accordance with [paragraph 18-37](#), and remove spent CO<sub>2</sub> cylinder and O-ring.

22. Perform a leakage test in accordance with [paragraph 18-47](#).

23. Install a 35-gram, Type III CO<sub>2</sub> cylinder in accordance with [paragraph 18-55](#).

**WARNING**

The packaging cord loop must be routed under the manual actuating lever, under the valve guide arm, then up through the valve guide arm hole. (See [figure 18-13](#).)

24. Ensure that packaging cord loop is routed as in [figure 18-13](#).

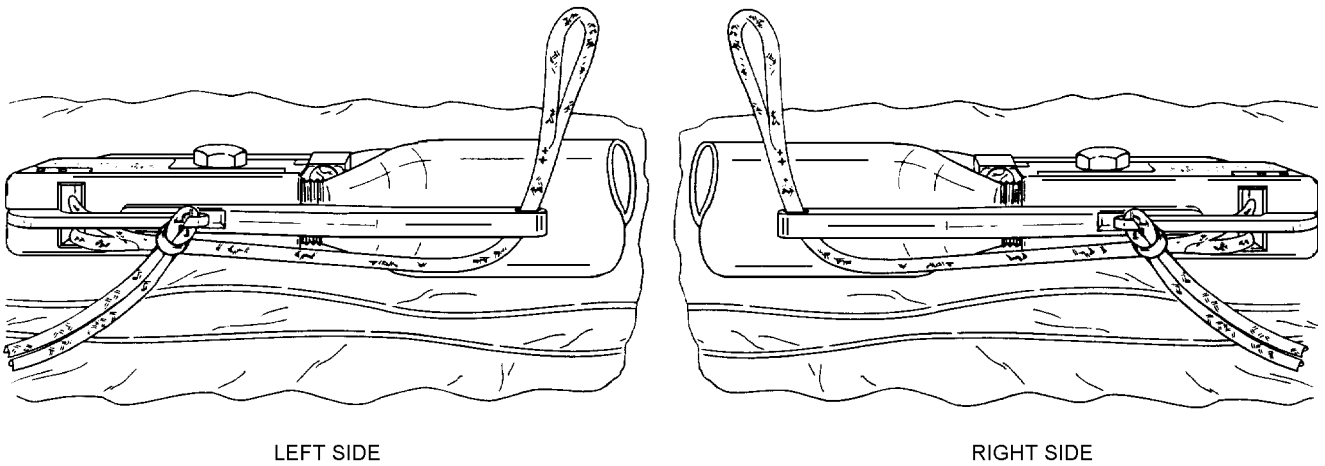


Figure 18-13. Packaging Cord Loop Routing

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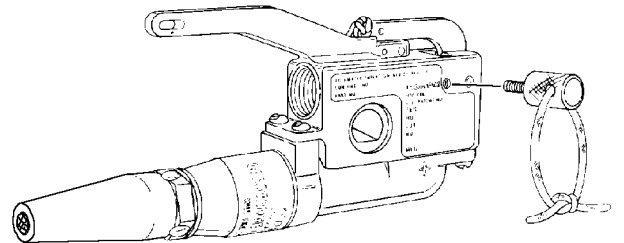
**18-78. REPLACEMENT OF PACKAGING CORD ON THE FLU-8B/P AUTOMATIC INFLATOR.** To replace packaging cord loop on the FLU-8B/P automatic inflator proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Screw, Retaining, Piercing Pin	1842-006-01 (CAGE 03688)
1	O-ring	MS28775-012 NIIN 00-005-0426
1	Packaging Cord	1138-003-01 (CAGE 03688) NIIN 01-066-3357

1. Remove CO<sub>2</sub> cylinder and O-ring from inflator.
2. Carefully remove inflator from life preserver.
3. Remove damaged cord.

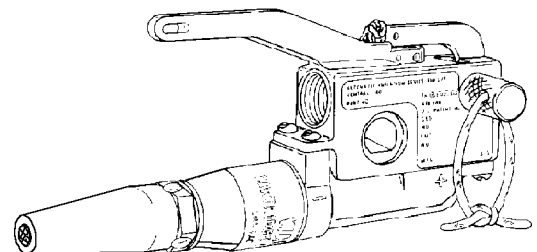
4. Start the piercing pin retaining screw into the appropriate hole.



R0078004

**Step 4 - Para 18-78**

5. Turn the screw until it just touches the piercing pin then back off one turn.

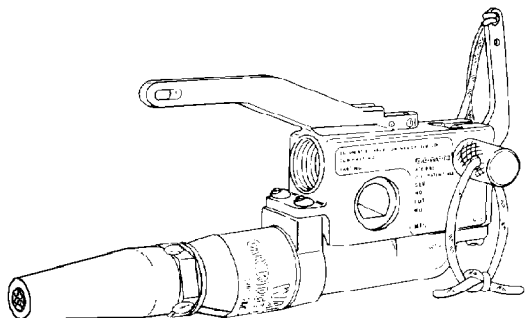


R0078005

**Step 5 - Para 18-78**

## NAVAIR 13-1-6.1-2

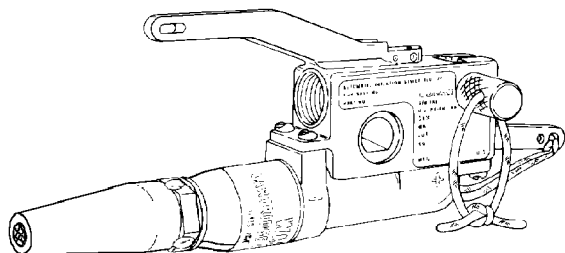
6. Operate the actuating lever to its mid-actuated position.



**Step 6 - Para 18-78**

R0078006

7. While holding the actuator lever in the mid-actuated position, tighten the retaining screw to hold the piercing pin in its full penetrating position.

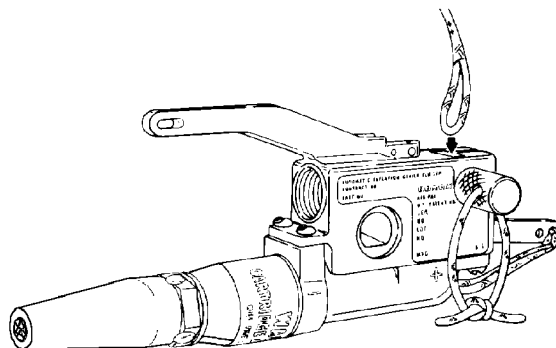


**Step 8 - Para 18-78**

R0078008

8. Operate the actuating lever to its full actuated position.

9. Insert the new packaging cord loop in the open lot on the inflator body.



**Step 9 - Para 18-78**

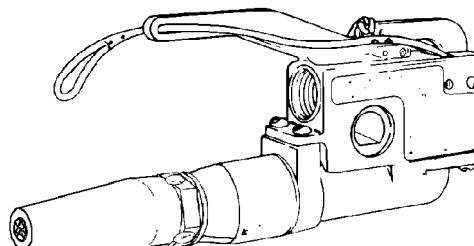
R0078009

### NOTE

There is an open slot on the opposite side of the body from the retaining screw hole. This slot may help in positioning the loop such that when the piercing pin, when released, will pass through the loop.

10. Operate the actuating lever to mid-actuating position. Remove the retaining pin, allowing the piercing pin to retract securing the loop.

11. Return actuating lever to normal position and ensure that actuating lever is properly cocked. If there is free play in actuating lever when it is in its cocked position, packaging cord loop is pinched. If necessary repeat steps 4 through 11 until actuating lever is properly cocked.



**Step 11 - Para 18-78**

R0078011



12. Replace inflator onto life preserver. Refer to [paragraph 18-77](#).

13. Install new O-ring and charged CO<sub>2</sub> cylinder. Refer to [paragraph 18-55](#).

14. Perform function test (refer to [paragraph 18-36](#)) and leakage test (refer to [paragraph 18-47](#)) and return to service.



The packaging cord loop is always routed under the guide arm and then up through the guide arm hole. See [figure 18-13](#).

**18-79. REPLACEMENT OF SENSOR PLUG CAP ASSEMBLY ON FLU-8B/P AUTOMATIC INFLATOR.** To replace damaged or defective sensor plug cap, proceed as follows:

Support Equipment Required

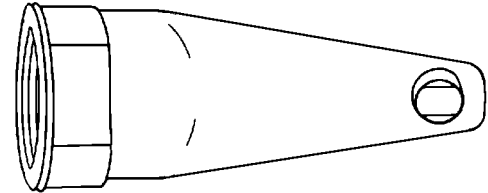
Quantity	Description	Reference Number
1	Sensor Plug Cap Assembly	P/N 1813-044-02 (CAGE 03688)



No foreign object should be inserted into sensor plug ports for any reason.

1. Remove damaged or defective sensor plug cap using a standard 3/4-inch wrench. See [figure 18-14](#).

2. Ensure sensor plug spring is symmetrical in form and securely mounted.



10180014

**Figure 18-14. FLU-8B/P Sensor Plug Cap**

3. Install new sensor plug cap. Plug shall be held in square alignment with housing while engaging threads. Ensure batteries are installed in accordance with [paragraph 18-56](#).

4. Torque FLU-8B/P sensor plug cap to 15 lb-in using 3/4-inch socket and torque wrench.

5. Test batteries in accordance with [paragraph 18-42](#).

**18-80. REPLACEMENT OF TOP AND BOTTOM GASKETS.** To replace the top and bottom gaskets on the FLU-8B/P inflator, proceed as follows:

Materials Required

Quantity	Description	Reference Number
1	Valve Stem Kit ( <a href="#">Note 1</a> )	105AS100-6 (CAGE 30003) NIIN 00-113-8290

Notes: 1. Valve Stem Kit, P/N 105AS100-6, NIIN 00-113-8290, contains one top and one bottom gasket.

NAVAIR 13-1-6.1-2

- 1. Remove cap nut and top gasket from inflator.
- 2. Remove inflator and replace bottom gasket.
- 3. Carefully place inflator onto valve stem.
- 4. Install top gasket onto valve stem.



Valve stem may rotate if cap nut is over torqued.

- 5. Tighten cap nut onto valve stem and torque to a value of 8 ± 1 in-lb.

- 6. Perform functional and leakage tests on life pre-server cell that was repaired. Refer to paragraphs 18-36 and 18-47.

**18-81. REPLACEMENT OF CHECK VALVE ASSEMBLY.** To replace a defective check valve assembly, proceed as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Tool, Valve Core	8769A or equivalent (CAGE 27783)
1	Wrench, Torque	—

Materials Required

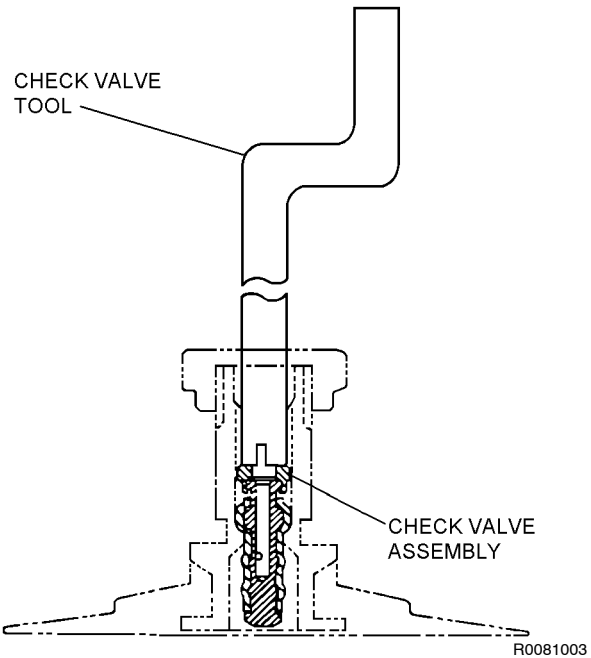
Quantity	Description	Reference Number
1	Valve, Pneumatic Inflator (Check Valve Assembly) (Note 1)	Schrader-Bridgeport P/N 8457500047

Notes: 1. Schrader-Bridgeport P/N 8457500047 must be open purchased from:  
Schrader-Bridgeport Intl  
205 Frazier Rd  
P.O. Box 668  
Altivista, VA 24517  
Phone (804) 369-8875

- 1. If not available, fabricate a valve core tool as shown in Chapter 3.

- 2. Remove inflator cap nut.

- 3. Insert valve core tool and unscrew check valve from valve stem.



Step 3 - Para 18-81

- 4. Insert new check valve in valve stem and tighten with valve core tool hand tight.



Valve stem may rotate if cap nut is over torqued.

- 5. Replace cap nut and torque to a value of 8 ± 1 in-lb.

- 6. Perform a functional and leakage test on life preserver cell that was repaired. Refer to paragraphs 18-36 and 18-47.

**18-82. FABRICATION OF PROTECTIVE COVER ASSEMBLY.** To fabricate a protective cover, proceed as follows:

Materials Required

Quantity	Description	Reference Number
17 x 6 inches	Cloth, Nylon, Polyurethane-coated, Type I	MIL-C-83489 NIIN 01-335-3129
12 x 5/8 inches	Fastener Tape, Hook, Type II	MIL-F-21840
12 x 5/8 inches	Fastener Tape, Pile, Type II	MIL-F-21840
As Required	Thread, Nylon, Type I or II, Size E, Sage Green	V-T-295 NIIN 00-204-3884

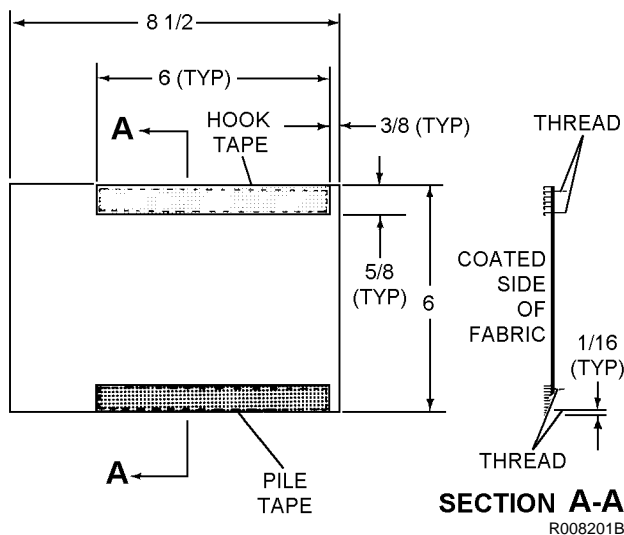
**NOTE**

Procedural [step 1](#) is for a right protective cover and [step 2](#) is for a left protective cover.

1. To fabricate a right protective cover, proceed as follows:

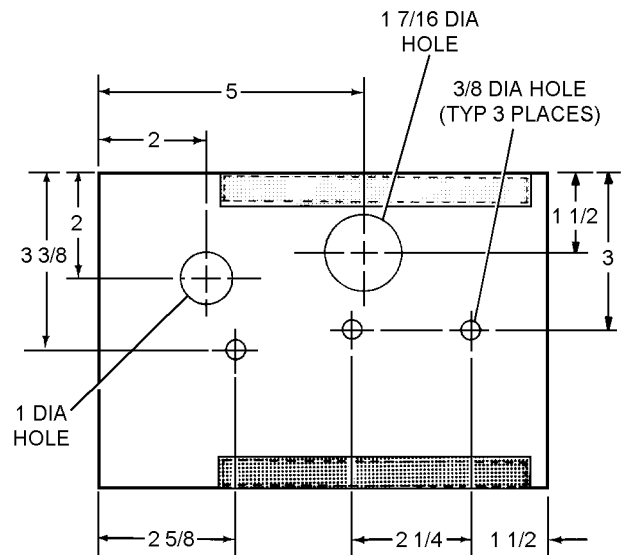
a. Cut an 8 1/2-inch length of coated nylon cloth.

b. Cut a 6-inch length of hook and pile tape and sew to the coated side of the coated nylon cloth. Use stitch type 301 stitching 8 to 10 stitches per inch.



Step 1b - Para 18-82

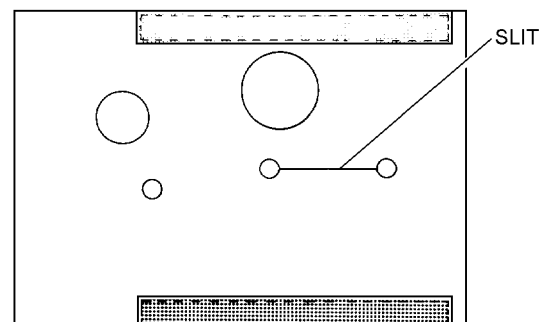
c. Position coated nylon cloth, coated side up, over cutting board and punch a 1 7/16-inch diameter hole, a 1-inch diameter hole and three 3/8-inch diameter holes.



Step 1c - Para 18-82

R008201C

d. Cut slit between two 3/8-inch diameter holes.



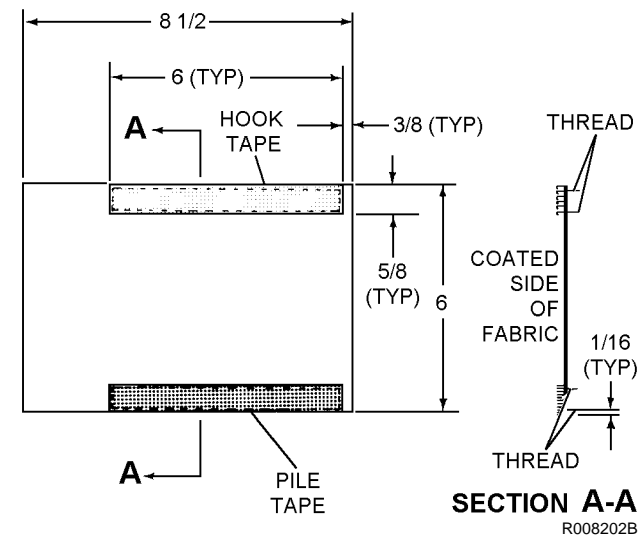
Step 1d - Para 18-82

R008201D

NAVAIR 13-1-6.1-2

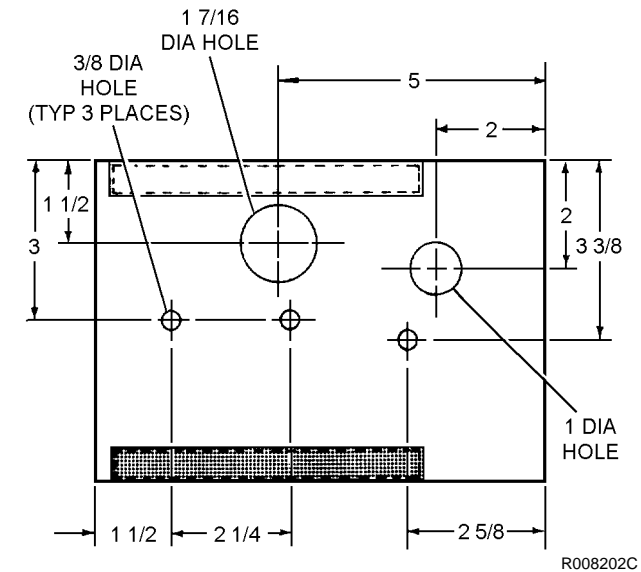
2. To fabricate a left protective cover, proceed as follows:

- a. Cut an 8 1/2-inch length of coated nylon cloth.
- b. Cut a 6-inch length of hook and pile tape and sew to the coated side of the coated nylon cloth.



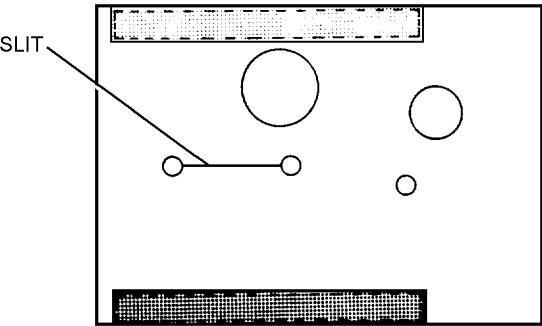
Step 2b - Para 18-82

c. Position coated nylon cloth, coated side up, over cutting board and punch a 1 7/16-inch diameter hole, a 1-inch diameter hole and three 3/8-inch diameter holes.



Step 2c - Para 18-82

d. Cut slit between two 3/8-inch diameter holes.



Step 2d - Para 18-82

R008202D

18-83. FABRICATION OF COLLAR LOBE WEBBING LOOPS. To fabricate collar lobe webbing loops, proceed as follows:

Materials Required

Quantity	Description	Reference Number
18-inch Length	Webbing, Nylon, Type IV, 1-inch Width	MIL-T-5038 NIIN 00-261-8579 (CAGE 81349)
2	Post, Snap Fastener	MS27981-5B NIIN 00-250-6858 (CAGE 96906)
2	Stud, Snap Fastener	MS27981-4B NIIN 00-901-9660 (CAGE 96906)
2	Socket, Snap Fastener	M527981-3B NIIN 00-276-4966 (CAGE 96906)
2	Cap, Snap Fastener	M527981-1B NIIN 00-276-4954 (CAGE 96906)

## Materials Required (Cont)

Quantity	Description	Reference Number
As Required	Thread, Nylon Type II, Size E	V-T-295 NIIN 00-204-3884

**NOTE**

All stitching shall be 10 to 12 stitches per inch, size E nylon thread.

1. Cut two 9-inch lengths of 1-inch wide nylon webbing and sear ends.

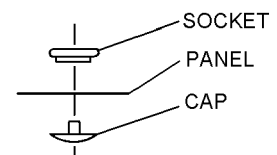
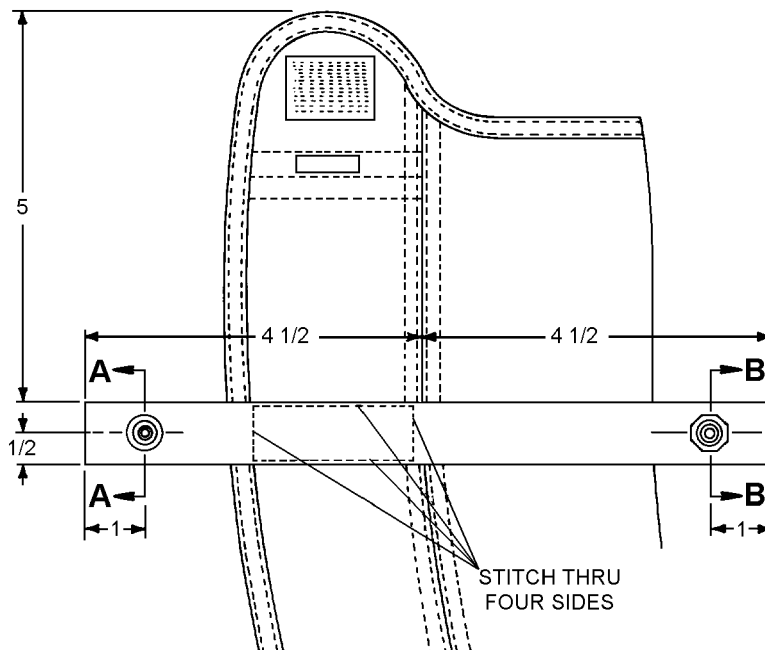
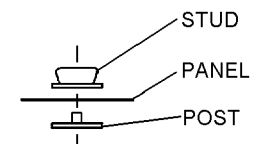
2. Sew one piece of webbing to outer side of each collar lobe casing in accordance with dimensions shown in figure 18-15.

3. Position and install snap fasteners in accordance with dimensions shown in figure 18-15, and ensure proper mate.

**18-84. FABRICATION AND INSTALLATION OF WAIST LOBE ATTACHMENT PATCH.** The following procedures pertain to the fabrication and installation of the left waist lobe attachment patch. These instructions are typical and are applicable for right waist lobe installations.

## Materials Required

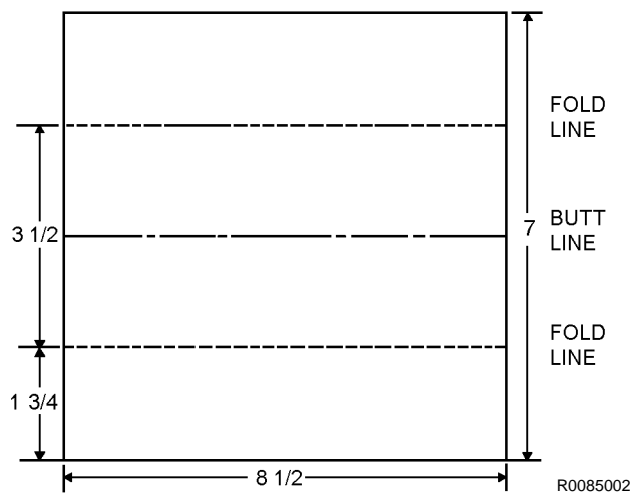
Quantity	Description	Reference Number
12	Cap, Snap Fastener	MS27983-1 NIIN 00-891-9073
12	Socket, Snap Fastener	MS27983-2 NIIN 00-945-2577
12	Stud, Snap Fastener	MS27983-3 NIIN 00-276-4908
12	Post, Snap Fastener	MS27983-1 NIIN 00-276-4978
As Required	Cloth, Nylon, Polyurethane-coated, Type I	MIL-C-87178 NIIN 01-335-3129
As Required	V-Tape, 1-inch	1957AS111-6
As Required	Adhesive, Polyurethane	MIL-A-47315 P/N UR-1092 NIIN 01-375-7855
As Required	Toluene	TT-T-548 NIIN 00-281-2002
-or-	Methyl Ethyl Ketone (MEK)	TT-M-261

**SECTION A-A****SECTION B-B****Figure 18-15. Addition of Webbing Loops**

10180015

**18-85. ATTACHMENT PATCH.** Procedures for fabrication and installation of the attachment patch are as follows:

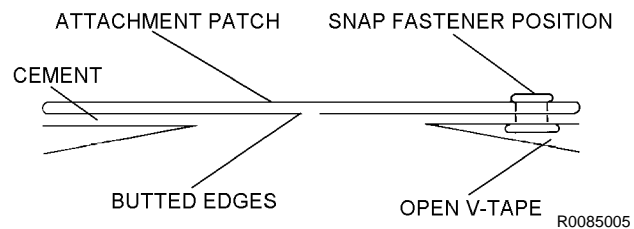
- 1. Spread deflated life preserver on clean flat surface.
- 2. Fabricate attachment patch using polyurethane coated nylon cloth.



3. Fold cloth at fold lines, with coated side inside, butt edges together at butt line to form attachment patch 8 1/2 inches by 3 1/2 inches. Crease edges at fold line.

4. Complete the basic attachment patch form by applying polyurethane adhesive to coated side of the patch in accordance with paragraph 18-63, fold and butt together edges as in step 3.

5. Cut two 8 1/2-inch lengths of one-inch V-tape and cement one length on each side of the attachment patch, open V to the outside. Follow cementing procedures in paragraph 18-63 using polyurethane adhesive.



6. Measure and punch six holes in attachment patch for installation of six uni-directional snap fastener sockets (figure 18-16).

7. Position attachment patch on waist lobe as indicated in figure 18-16 and mark the area on waist lobe. Apply polyurethane adhesive in accordance with paragraph 18-63 and attach the patch to waist lobe.

8. Install six uni-directional snap fastener sockets with dots on buttons oriented to center point of attachment patch (figure 18-16).

**18-86. INSTALLATION OF CASING ATTACHMENT PATCH SNAP FASTENER STUDS.** Install six uni-directional snap fastener studs in waist lobe casing as follows:

- 1. Spread casing assembly flat on clean level surface. Hold in flat non-distorted position using thumb tacks or other available means not harmful to fabric.
- 2. Measure and mark snap fastener positions using dimensions in figure 18-17. Remove restraints from casing.

3. Install six snap fastener studs and eyelets.

**18-87. FABRICATION AND INSTALLATION OF LOCKING PIN COVER (LIFE PRESERVERS WITHOUT NO. 3 SPUR GROMMET).** Fabricate and install the locking pin cover as follows:



Only Polyurethane adhesives and Polyurethane-coated cloth patches shall be used on Polyurethane-coated life preserver assemblies.

Materials Required

Quantity	Description	Reference Number
1	Socket, Snap Fastener	MS27981-3B
1	Cap, Snap Fastener	MS27981-1B
As Required	Cloth, Nylon Polyurethane-coated, Type I	MIL-C-83489 NIIN 01-335-3129
As Required	Thread, Stitching, Nylon, Type I or II, Size E	V-T-295 NIIN 00-204-3884

## Materials Required (Cont)

Quantity	Description	Reference Number
As Required	Tape, Binding, Nylon, 3/4-inch Wide, Sage Green 1551 Type III	MIL-T-5038 NIIN 00-176-8083

1. Cut basic locking pin cover from polyurethane coated nylon cloth in dimensions shown in [figure 18-18](#). Define form of locking pin cover using appropriate end of casing waist lobe assembly as pattern.

2. Reinforce fabric with single row stitching around entire perimeter of locking pin cover.

3. Apply 3/4-inch binding tape to perimeter of cover as shown in [figure 18-18](#).

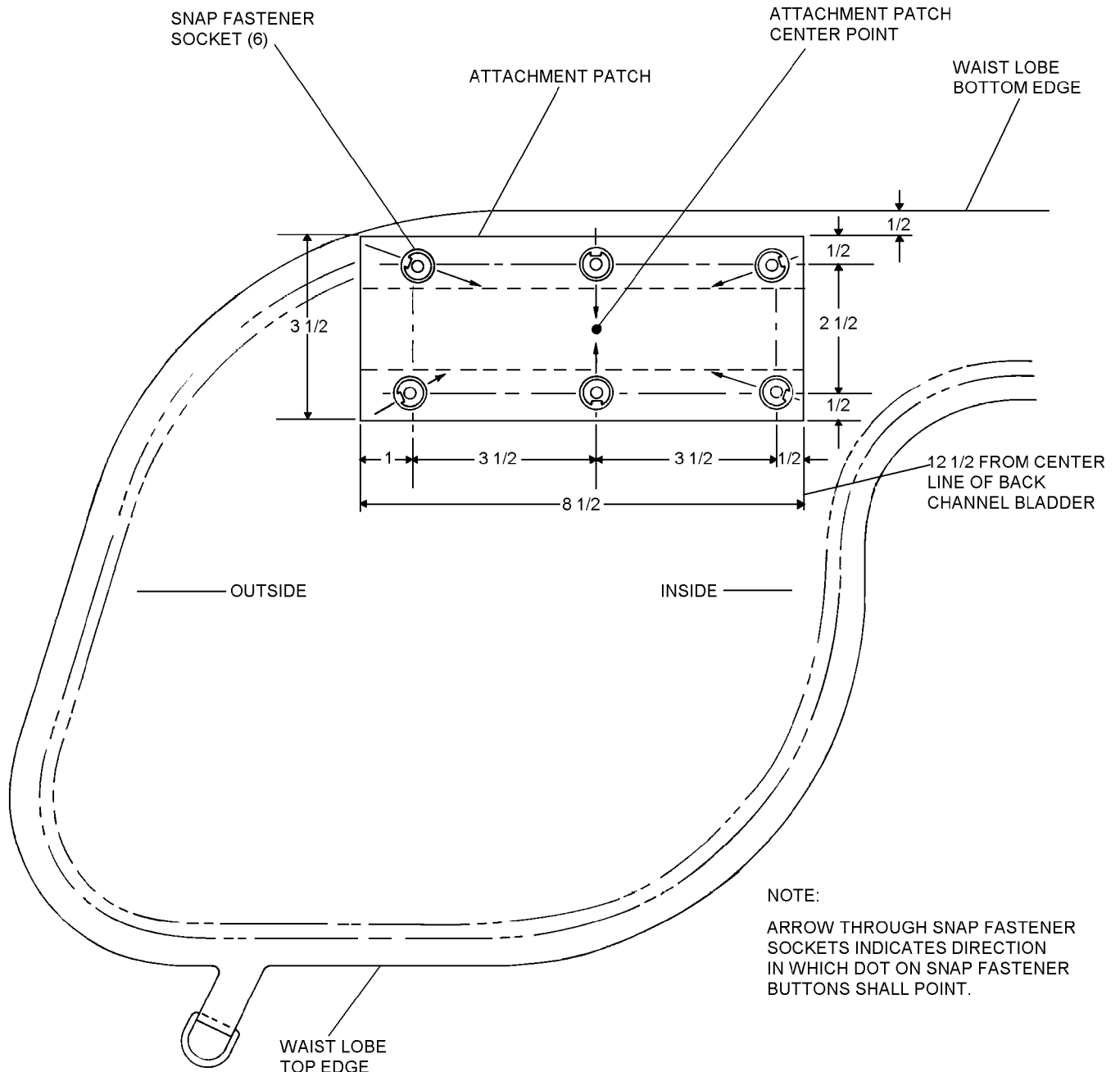
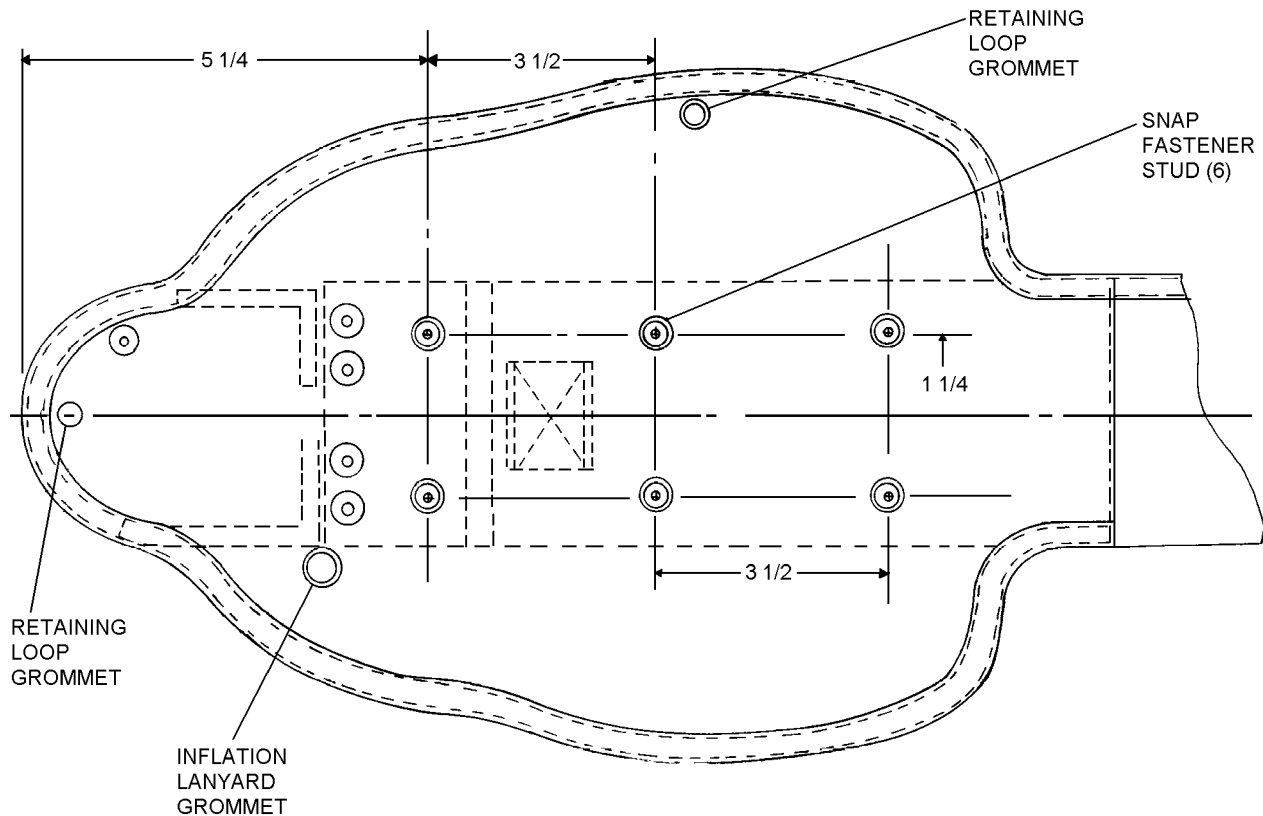


Figure 18-16. Attachment Patch Installation Dimensions

10180016



**Figure 18-17. Installation Casing Attachment Patch Snap Fastener Studs**

10180017

4. Align locking pin cover with mating surface of casing assembly and install in accordance with [figure 18-19](#).

**NOTE**

Binding tape may be in one continuous strip or two sections.

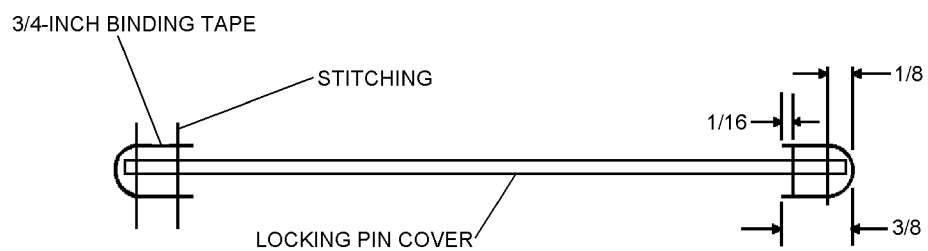
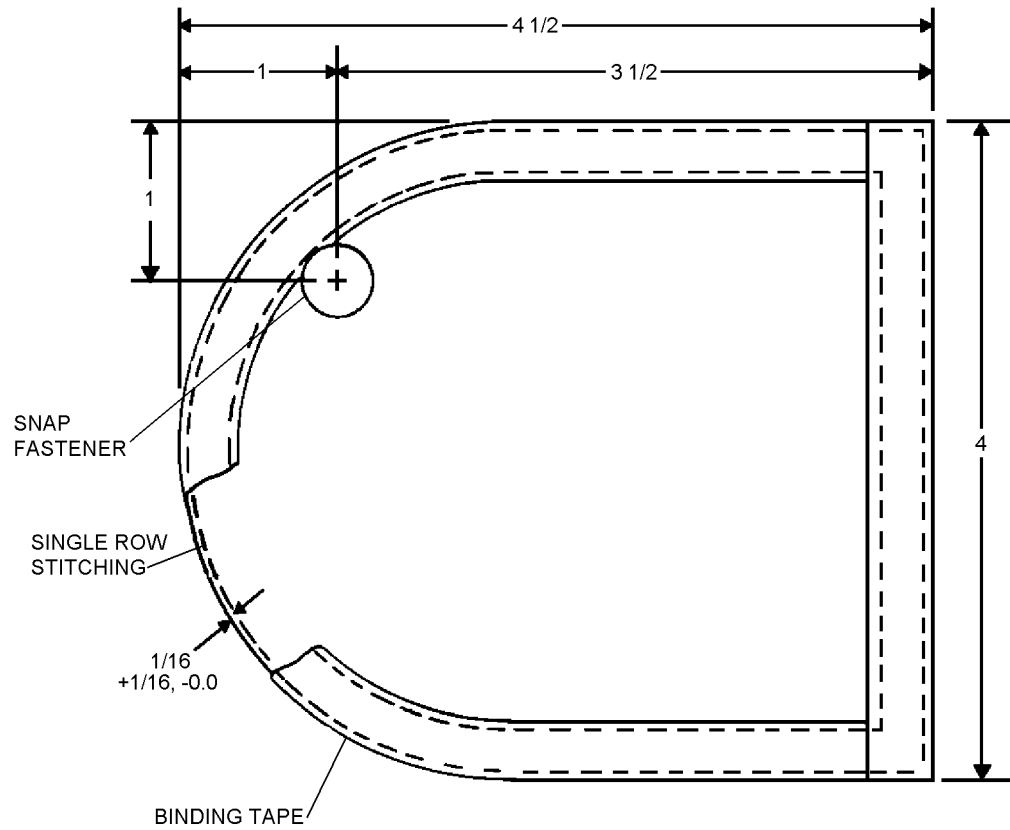
**NOTE**

When properly aligned with casing assembly, the straight edge of locking pin cover will be butted 1/8-inch from edge of beaded inflation handle snap fastener stud installation (casing main panel subassembly).

5. Mark snap fastener alignment and install locking pin cover, snap fastener socket and button.

**18-88. Deleted.**



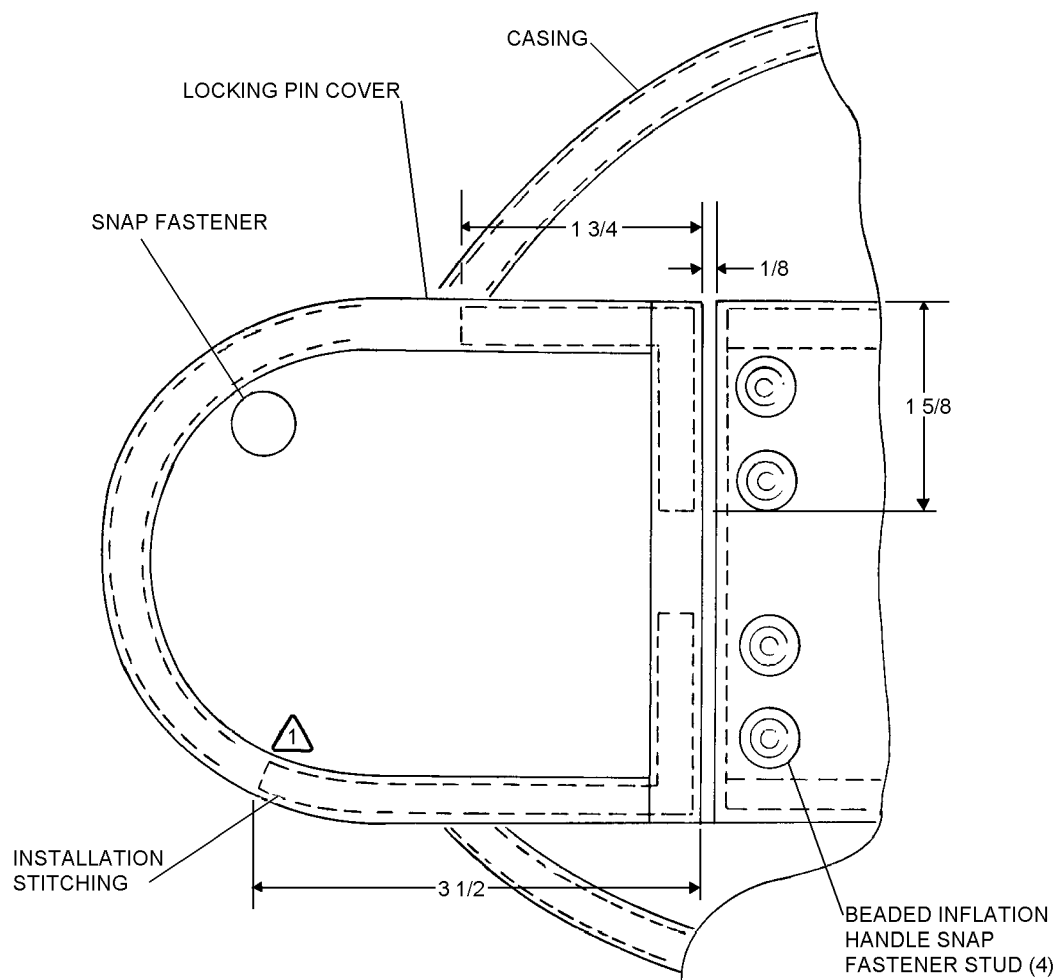


BINDING TAPE INSTALLATION

RIGHT HAND SHOWN - LEFT HAND OPPOSITE

Figure 18-18. Fabrication of Locking Pin Cover

10180018



RIGHT HAND SHOWN - LEFT HAND OPPOSITE

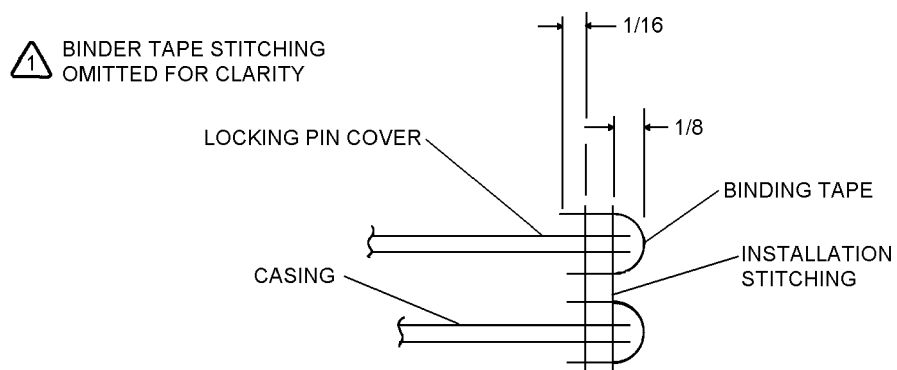


Figure 18-19. Locking Pin Cover Installation

10180019

Figure 18-20 Deleted.



18-89. PACKING PROCEDURES FOR LPU-23C/P LIFE PRESERVER ASSEMBLY.

18-90. The LPU-23C/P shall be packed by qualified personnel at the intermediate maintenance level. For cleaning and servicing procedures, refer to [paragraph 18-51](#).

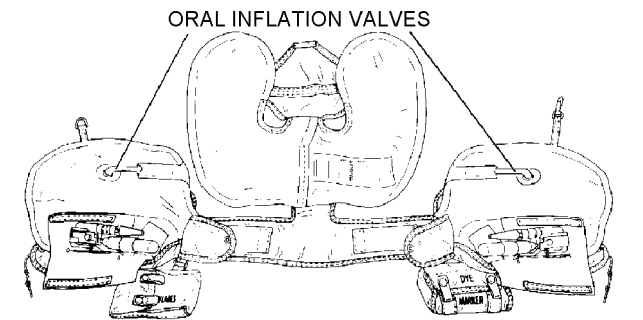
18-91. To pack the LPU-23C/P life preserver assembly, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Talc, Technical	MIL-T-50036A NIIN 01-080-9589
As Required	Cord, Nylon Type I	MIL-C-5040 NIIN 00-240-2154
As Required	Thread, Nylon Size A	V-T-295 NIIN 00-204-3884
As Required	Thread Nylon Size E	V-T-295 NIIN 00-204-3884

1. Ensure that life preserver has been inspected in accordance with [paragraph 18-25](#).

2. Prior to packing, ensure that chambers are thoroughly deflated. Ensure all bladder surfaces front and rear are lightly dusted with talc.

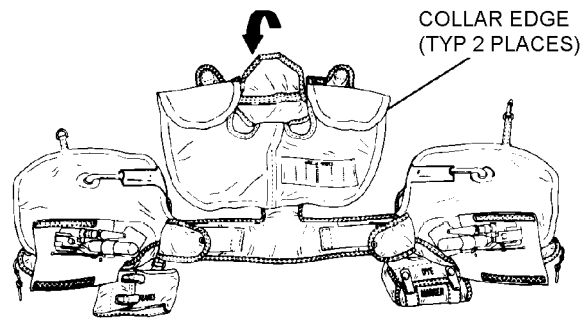
3. Oral inflation valves shall be locked by knurled ring and placed in oral inflation valve pocket. Position LPU-23C/P life preserver assembly with collar panel folded down.



Step 3 - Para 18-91

R0091003

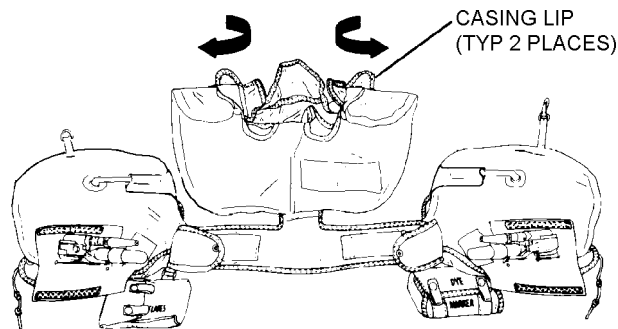
4. Insert collar snaphooks through slots in collar casing and fold collar edge over slots in casing.



Step 4 - Para 18-91

R0091004

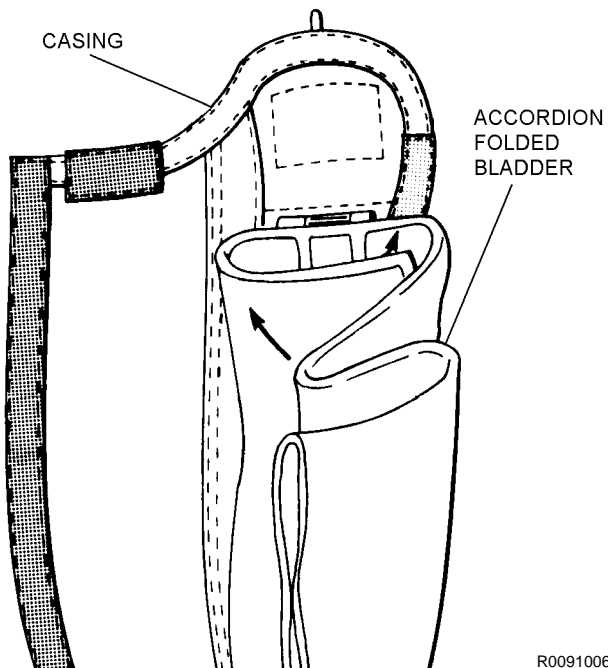
5. Fold over edge of collar panels.



Step 5 - Para 18-91

R0091005

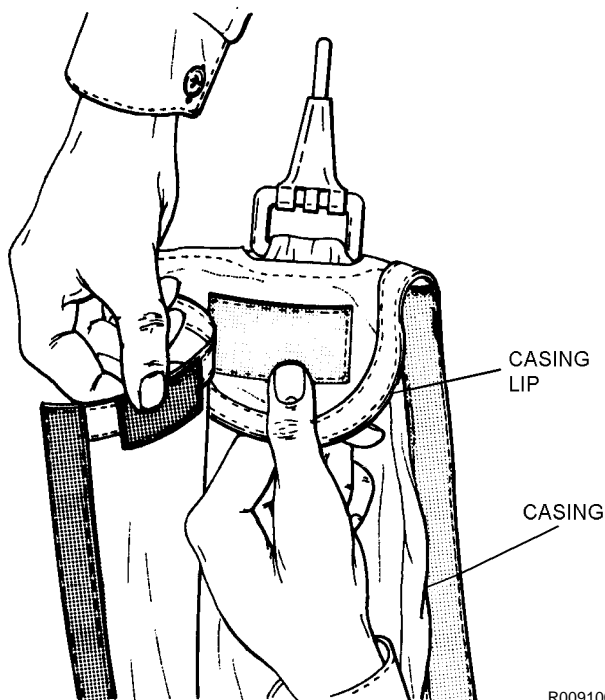
6. Accordion-fold sides of collar lobes into the collar casing.



Step 6 - Para 18-91

R0091006

7. Tuck in casing lip and secure collar casing with hook and pile tape.



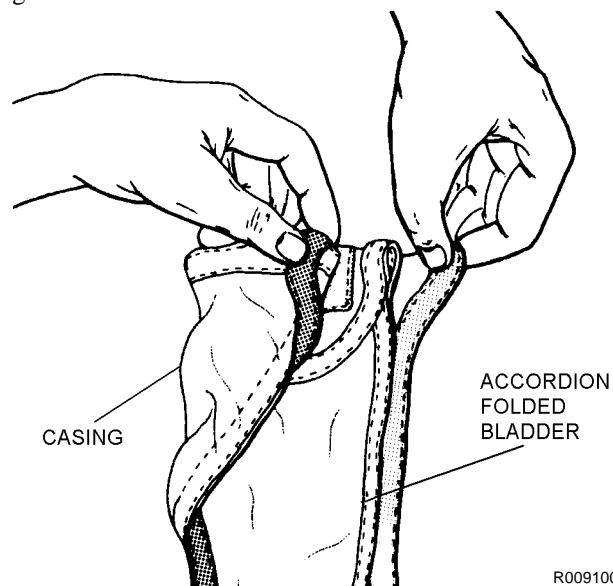
Step 7 - Para 18-91

R0091007

# **NOTE**

The unsewn 3/8 to 1/2-inch end tab of hook tape located on the front edge of the collar lobe casing shall be attached to the mating pile tape on the collar casing cover.

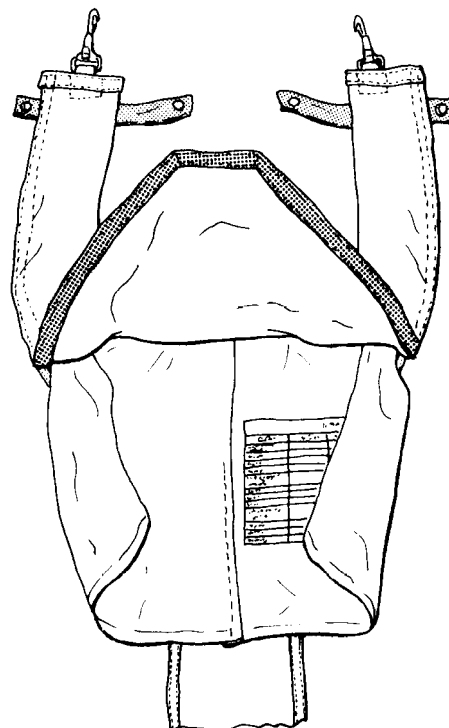
8. Close collar lobe section by engaging the 3/8 to 1/2-inch unsewn portion of hook pile tape on casing cover.



Step 8 - Para 18-91

R0091008

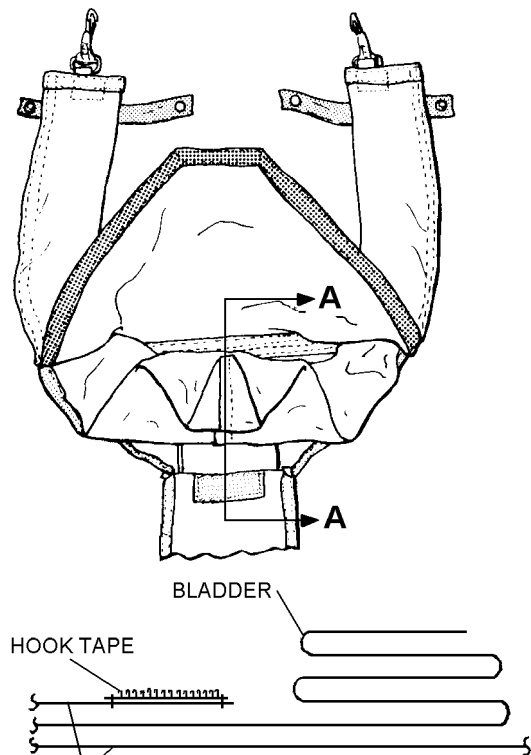
9. Secure hook and pile tape approximately 8 inches along casing cover edge, securing the accordion-folded bladder within casing cover.



Step 9 - Para 18-91

R0091009

10. Accordion-fold bottom of collar lobe into collar casing.



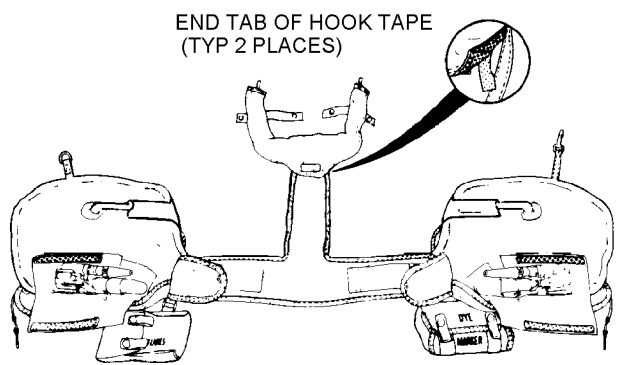
**SECTION A-A**  
**Step 10 - Para 18-91**

R0091010

**NOTE**

The unsewn 3/8 to 1/2-inch end tab of hook tape located on the rear edges of the collar lobe casing shall be attached to the mating pile tape on the collar casing cover.

11. Continue securing hook and pile tape along casing cover edge and casing lip, ending on unsewn end tabs of hook tape, completely enclosing collar lobe bladder within casing cover. Ensure all hook tape is engaged with pile tape and not exposed.



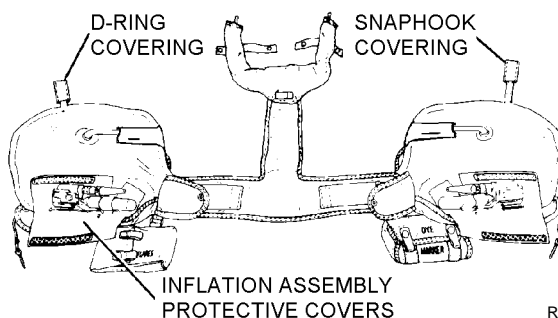
**Step 11 - Para 18-91**

R0091011

**WARNING**

The packaging cord loops of each inflation assembly must be routed under the manual actuating lever, and through the hole in the end of the valve guide arm. See [figure 18-13](#). Rubber bands shall not be used to retain slip-on pockets to D-ring and snap-hook fittings.

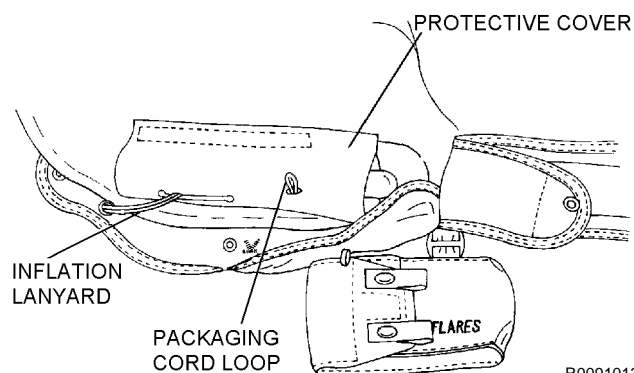
12. Insert snaphook and D-ring on waist lobes into slip-on pockets.



**Step 12 - Para 18-91**

R0091012

13. Ensure that beaded handle with inflation lanyard is through 2 1/4-inch slot in protective cover; then route packaging cord loop through 3/8-inch diameter hole in protective cover. Secure protective cover using hook and pile tape.



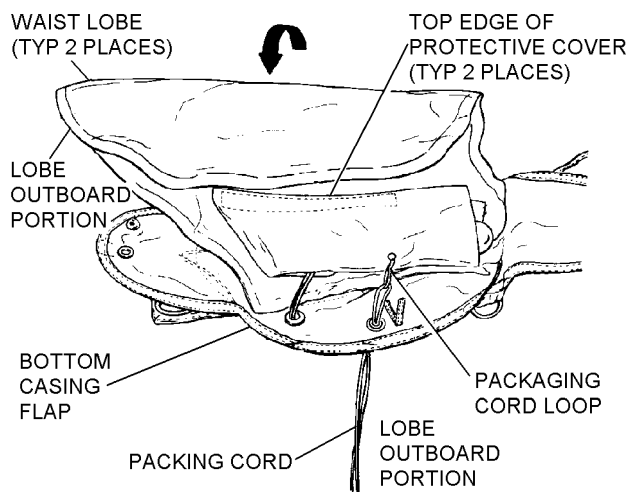
**Step 13 - Para 18-91**

R0091013

**NOTE**

Packing cord shall be used to aid in closing life preserver casing.

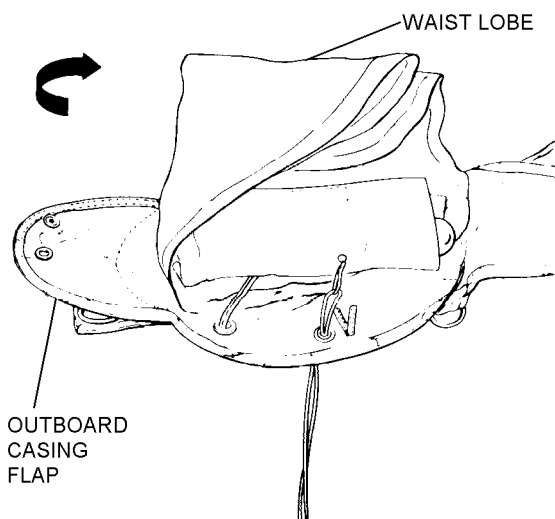
14. Insert a 2-foot piece of Type I nylon cord through packaging cord loop extending through hole in protective cover. Insert ends of packing cord through grommet in bottom casing flap. Make first fold in waist lobe by bringing top of lobe over to top edge of protective cover.



**Step 14 - Para 18-91**

R0091014

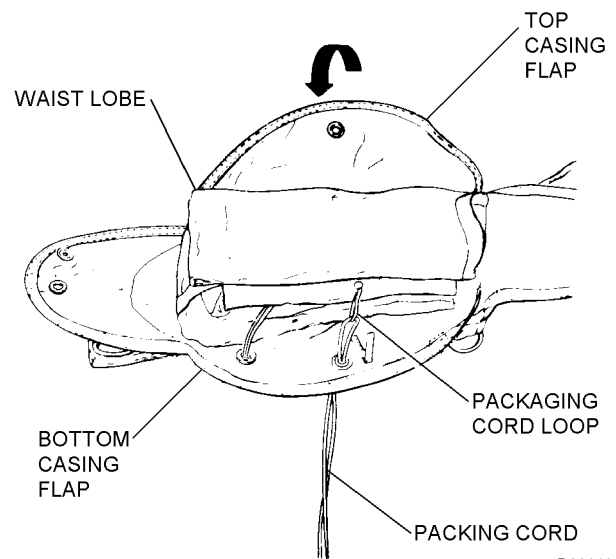
15. Fold outboard portion of waist lobe in, clearing outboard casing flap.



**Step 15 - Para 18-91**

R0091015

16. Fold waist lobe over to bottom edge of protective cover.

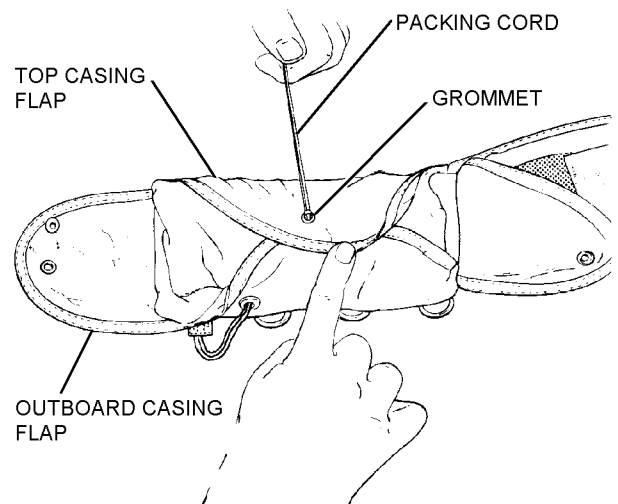


**Step 16 - Para 18-91**

R0091016

17. Fold bottom casing flap up, and over folded waist lobe and pass ends of packing cord through grommet in top flap.

18. Fold top casing flap down and over bottom casing flap. Pull packing cord and attached packaging cord loop through grommet in top casing flap.

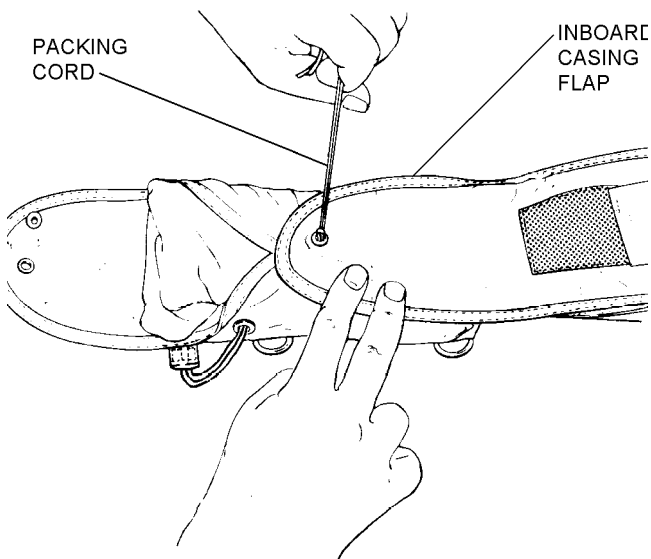


**Step 18 - Para 18-91**

R0091018

## NAVAIR 13-1-6.1-2

19. Thread packing cord through inboard casing flap grommet. Pull packaging cord loop through grommet.



Step 19 - Para 18-91

R0091019

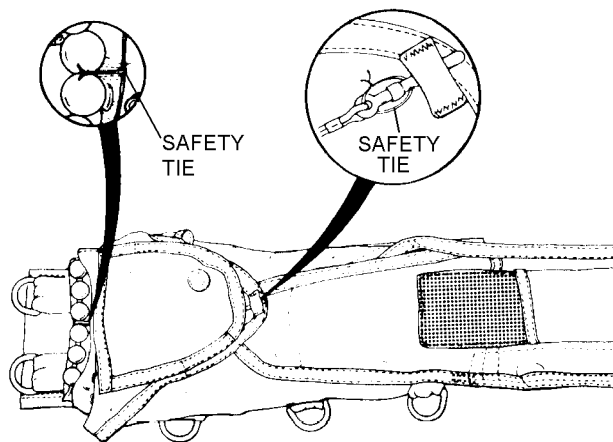
20. Route locking pin under locking pin cover flap (figure 18-21) grommet.

### WARNING

To avoid possible injury when closing casing of right waist lobe, do not place palm of hand on waist closure snaphooks.

21. Fold outboard casing flap over. Pass packing cord through grommets and pull packaging cord loop through grommet far enough to accept locking pin. Insert locking pin through packaging cord loop and into pin keeper loop. Remove packing cord (figure 18-21).

22. Safety-tie eye of locking pin by passing one turn of size A nylon thread through eye of locking pin, around packaging cord loop, then under pin. Safety-tie beaded inflation handle with one turn of size E nylon thread, single. Draw thread sufficiently to permit a  $1/2 \pm 1/8$ -inch space between the middle beads and webbing on the preserver. Tie ends of both safety ties with a surgeon's knot followed by a square knot.



Step 22 - Para 18-91

R0091022

23. Close locking pin cover flap and secure snap fastener.

### NOTE

NAVAIR 13-1-6.5, Rescue and Survival Equipment, contains information on inspection and replacement of survival items.

24. When required, ensure survival items have been inspected for expiration and damage.

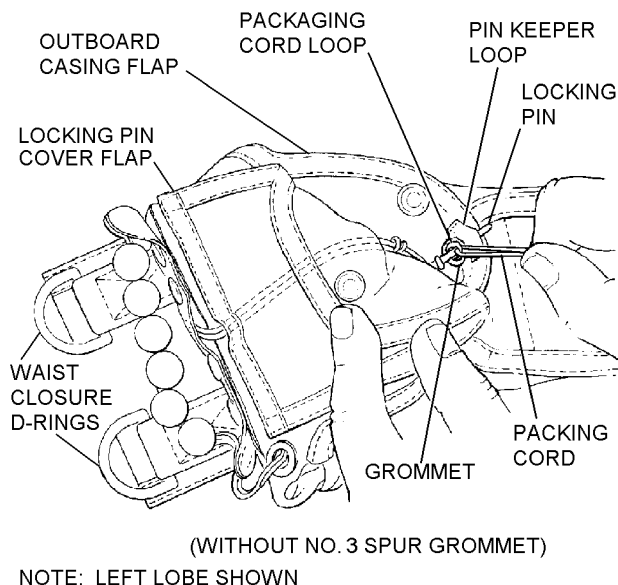


**NOTE**

Each survival item shall be secured to the snap fastener tab of its respective pouch with a 36-inch length (DYE MARKER) or 80-inch length (FLARES) of nylon cord (MIL-C-5040, Type 1). Sear ends of each cord.

25. When required, insert two dye markers into pouch labeled DYE MARKER. Insert two Marine Smoke and Illumination signals into pouch labeled FLARES. Fake excess line and secure with rubber bands.

26. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.



10180021

**Figure 18-21. Packing LPU-23C/P Life Preserver**

## Section 18-4. Illustrated Parts Breakdown (IPB)

### 18-92. GENERAL.

18-93. This section lists and illustrates the assemblies and detail parts of the LPU-23C/P Life Preserver assembly.

18-94. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

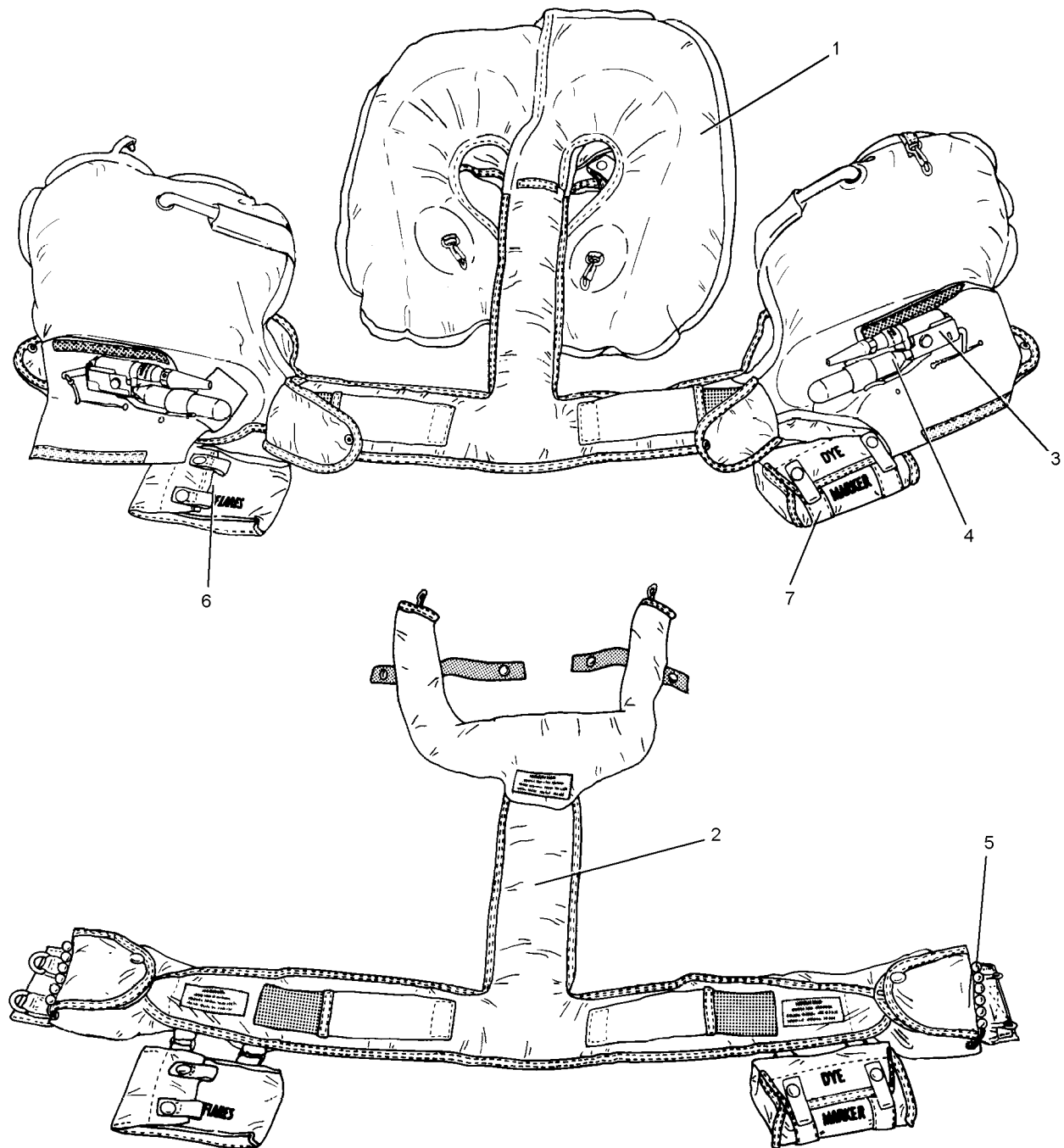


Figure 18-22. LPU-23C/P Life Preserver Assembly, Illustrated Parts Breakdown

10180022

Figure and Index Number	Part Number	Description	Units Per Assembly	Usable On Code
		1 2 3 4 5 6 7		
18-22	No Number	LPU-23C/P LIFE PRESERVER .....	REF	
-1	1957AS103-1 (NIIN 01-407-3390)	. INFLATABLE LIFE PRESERVER, ..... LPU-23C/P	1	
-2	1957AS104-2 (NIIN 01-399-1270)	. . CASING ASSEMBLY .....	1	
-3	849AS153 (NIIN 01-364-4089)	. . INFLATION ASSEMBLY, FLU-8B/P ..... (30003)	2	
	849AS103	. . . BATTERY, 6-Volt, Manganese Dioxide ....	4	
	1122-095	. . . SLEEVE, Battery Insulating (Note 3) .....	1	
	1813-044-02	. . . SENSOR PLUG CAP, FLU-8B/P ..... (03688)	2	
	105AS100-3	. . . GASKET, Top (30003) (Note 1) .....	2	
	105AS100-4	. . . GASKET, Bottom (30003) (Note 1) .....	2	
	NIIN 01-046-3300	. . . SEAT SEAL, O-Ring, Multi .....	2	
	1138-003-01	. . . PACKAGING CORD LOOP .....	2	
-4	MIL-C-25369 (NIIN 01-077-8773)	. . . CO <sub>2</sub> CYLINDER, Type III, 35 Gram .....	2	
-5	975AS121-11 (NIIN 01-120-4752)	. . . BEADED INFLATION HANDLE, ..... Type I	2	
-6	68A73D3-61	. . FLARE POUCH ASSEMBLY (30003) ..... (Note 2)	1	
-7	68A73D2-41	. . DYE MARKER POUCH ASSEMBLY ..... (30003) (Note 2)	1	
Notes:		<p>1. Top and bottom gaskets are obtained from Valve Stem Kit, P/N 105AS100-6, NIIN 00-113-8290, which contains one top and one bottom gasket.</p> <p>2. Optional equipment at the discretion of the Squadron Commander.</p> <p>3. The battery insulating sleeve is not a stocked item. After installation directed by Aircrew Systems Bulletin 976, it becomes part of the FLU-8B/P Unit. Replacement sleeves are issued by Indian Head Division, NSW.</p>		

# NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code
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MIL-C-25369	18-22-4	PAGZZ
NIIN 01-046-3300	18-22-3	
105AS100-3	18-22-3	
105AS100-4	18-22-3	
1122-095	18-22-3	
1138-003-01	18-22-3	PA--Z
1618-012-01	18-22-3	PA--Z
1813-044-02	18-22-3	

Part Number	Figure and Index Number	SM&R Code
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1957AS103-1	18-22-1	PAOGG
1957AS104-2	18-22-2	
68A73D2-41	18-22-7	PAGZZ
68A73D3-61	18-22-6	PAGZZ
849AS103	18-22-3	PA--Z
849AS153	18-22-3	PA--Z
975AS121-11	18-22-5	PAGZZ